cycles

—A MONTHLY REPORT

February 1954

FOUNDATION FOR THE STUDY OF CYCLES
New York, New York

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cycles
—a monthly report

The official Bulletin of the Foundation for the Study of Cycles

VOLUME V NUMBER 2 FEBRUARY 1954

The Director's Letter

Dear Member:

This month I am going to continue for you the 1954 Postscript about the very important 9-year cycle. As this month's supplement I am going to reprint for you Samuel Benner's forecast of pig iron prices, made in 1875. This forecast, based on the 9-year cycle, is the most remarkable price forecast ever made. It showed a gain-loss ratio of 45 to 1 up to World War II. By now, however, it is out of step with reality. It cannot be expected to work very well in the future.

Next month I plan to report to you upon my own findings in respect to the 9-year cycle in pig iron prices, and in copper prices, too, if there is room. I am going to show you that the 9-year cycle appears to be a compound cycle with components 9.2 and 8.5 years long respectively, and that henceforth it is due to manifest itself, for the next 100 years or so, with a different timing from that which one would expect, based on the timing of the past 100 years.

It is really something if you can forecast that just *because* something has happened a certain way for a hundred years it will henceforth happen differently for the next hundred years. It shows you know what you are talking about (if it comes true!).

I never say I can forecast, or hear anyone else say he can forecast, that I am not reminded of Glendower in Shakespeare's *King Henry IV, Part I,* and Hotspur's retort:

Glendower: ...Give me leave
To tell you once again that...
I am not in the roll of common men...
I can call spirits from the vasty deep.
Hotspur:
Why, so can I, or so can any man;
But will they come when you do call for them?

Good old Hotspur! He had the right idea, didn't he?

The Basic Structure of Manufacturing Production

As I promised you, I am also continuing for you my presentation regarding the basic structure of manufacturing production in this country since 1809, and what it implies for the future.

I continue to feel satisfied with the picture presented to you in our January report. This picture is elaborated upon in the lead article of the current issue. Although the findings are tentative as to detail, I believe the projection reveals to you the main *framework* within which we and our children will operate during the next fifty years.

There is no need to repeat at length all the qualifications which need to be kept in mind in connection with this projection. It is enough to say here that the projection is based upon the premise that the main structure of manufacturing production is the result of major rhythmic factors and that these forces will continue. Others might not agree with these assumptions.

Three or four repetitions of a cycle are mighty little to go on. It is perfectly possible that I may be using two imaginary cycles merely to *describe* some accidental ups and downs which have occurred during the past 150 years. However, if it happens that we really have uncovered the basic structure of our economy, it will doubtless prove to be the most important single piece of cycle research the Foundation has done to date. It will be ten or twelve years before we can be sure. But, in the meantime, I personally am sure enough of the projection so that it is going to be my own frame of reference until there is some evidence that it is wrong.

In future reports short term cycles in manufacturing production will be isolated for you. They will be projected individually (as in our reports for November and December). Finally they will be combined into a synthesis which will throw light on the probabilities of the short as well as of the long term picture.

For the long term picture we have the following indications:

As you doubtless know, the Federal Reserve Board's old Index of Industrial Production (1935—39 = 100) averaged about 250 for the past year. On the same basis the level of the underlying growth trend for 1953 seems to have been about 161. If this determination is correct, the difference of 89 points (about 55% excess over trend) is the result of the various cycles and random factors operating at the present time.

I should perhaps take a few words to define trend. Trend is the tendency of data in a series of figures to increase during a long period of time. The period of time being discussed here is about 200 years long. Trend changes its slope but slowly. The trend may be thought of as a curved axis around which the actual values fluctuate.

By 1963, trend, as determined, will have increased to an index value of 190. At complete maturity—about the year 2000—trend will have increased to an index value of about 242.

From the above figures you can see that, barring some major change in the trend, manufacturing production in this country has about 50% growth ahead of it. It should achieve this growth during the next fifty years.

Wrapped around the trend, and around each other, are the cycles. The two main ones we are discussing here, of 50 and 36 years respectively, as presently determined, called for a level of about 222 (38% above trend) in 1953. The difference between this level and the actual level is due to shorter cycles and random factors.

As nearly as can be determined at the present time, the 50-year cycle turned down in 1953; the 36-year cycle is due to follow suit in 1955. By that time the combination of the three factors (the 50-year cycle, the 36-year cycle, and the trend) is due to be at an index level of 233. Actual values of the index will of course be above or below this level, depending upon the shorter cycles and the random factors.

By the year following, 1956, the two main cycles and the trend are due to be down to 229, a reduction of only 4 points on the index. Such a falling off is not very important in any one year, and could easily be modified importantly, up or down, by shorter cycles and random factors.

However, by 1973, the two main cycles and the trend are due to be down to an index value of 160. It is easy to see that any short turn setback coming at that time might turn out to be very important indeed.

Let me re-emphasize that the combined effect of trend and the two major cycles (downward for 20 years) does not mean that production will be going down *year by year* during that period. Far from it! We will have a succession of ups and downs. Some of the "ups" may very possibly be above present levels. Some of the "downs" may be eased or limited by governmental action. But, and these are the things to remember, the projection says, one, that any depression in the immediate future is likely to be relatively minor, two, that the booms are due to have a progressively harder time of it, and, three, barring adequate governmental action to the contrary, sometime during the period 1964 to 1986 we are due to have a really major depression.

Cordially yours,

Edward R. Dewey

Director

Research

CYCLES IN MANUFACTURING PRODUCTION

The Basic Structure
—continued

IN the January report I promised to present to you the evidence which convinced me that the basic structure of manufacturing production in the United States is a smooth trend still upward but gradually getting flatter, a cycle about 50 years long, and a cycle about 36 years long.

The Evidence

The evidence is simple:

A. If you *assume* a perfectly regular trend and a perfectly regular 50-year cycle, adjust for them, and smooth the results, there remains an exceptionally regular 36-year cycle. See Figs. 3 and 4.

B. If you *assume* a perfectly regular trend and a perfectly regular 36-year cycle, adjust for them, and smooth the result, there remains an exceptionally regular 50-year cycle. See Figs. 5 and 6.

C. If you *assume* a perfectly regular 50-year cycle and a perfectly regular 36-year cycle and adjust for them, the residual shows minor variations above and below a precise *mathematical trend.*

Of course these assumptions were not made in my own head—in a vacuum, as it were! They were arrived at by successive approximations.

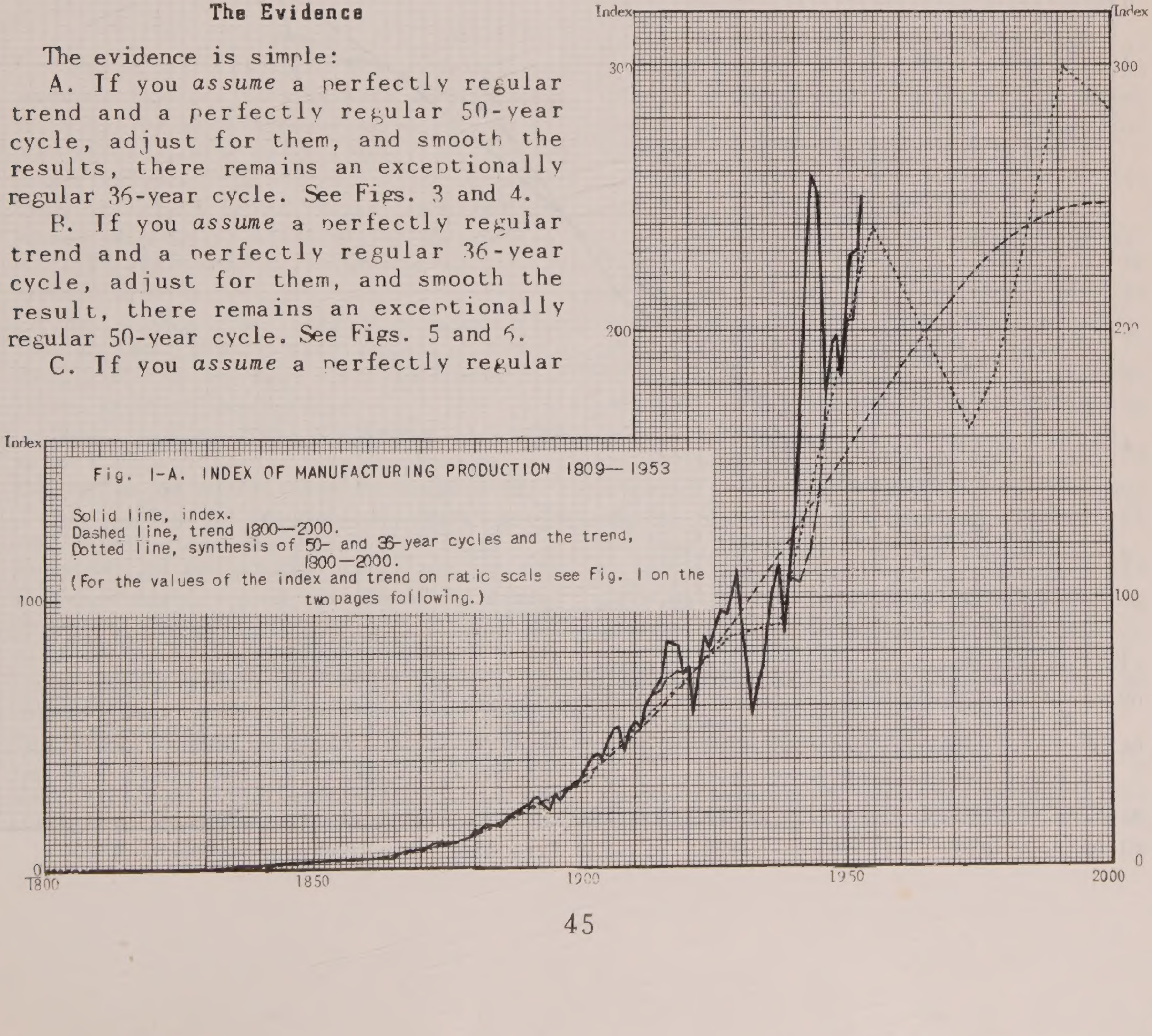


Fig. 1-A. INDEX OF MANUFACTURING PRODUCTION 1809—1953

Solid line, index.
Dashed line, trend 1800—2000.
Dotted line, synthesis of 50- and 36-year cycles and the trend, 1800—2000.
(For the values of the index and trend on ratio scale see Fig. 1 on the two pages following.)

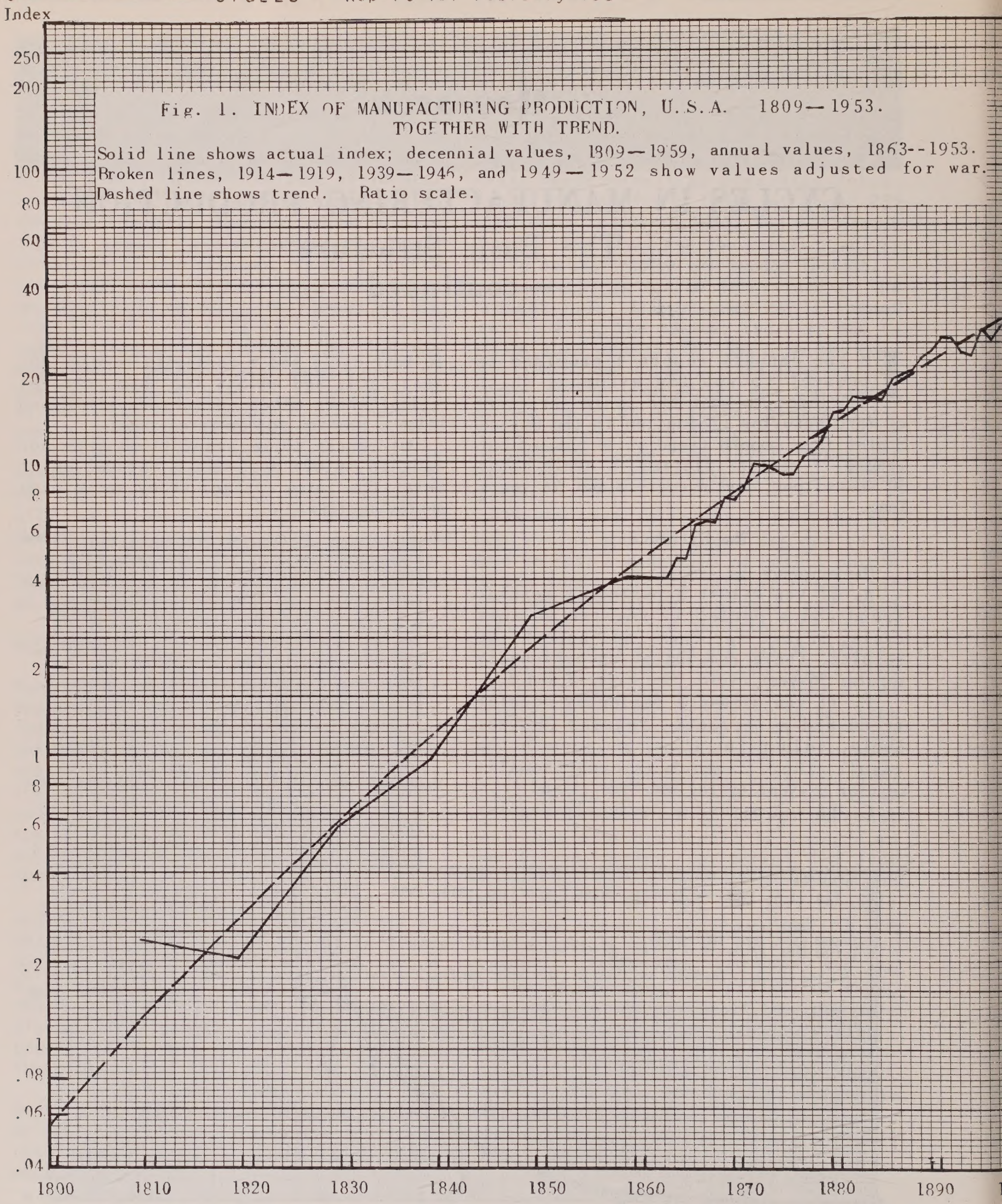
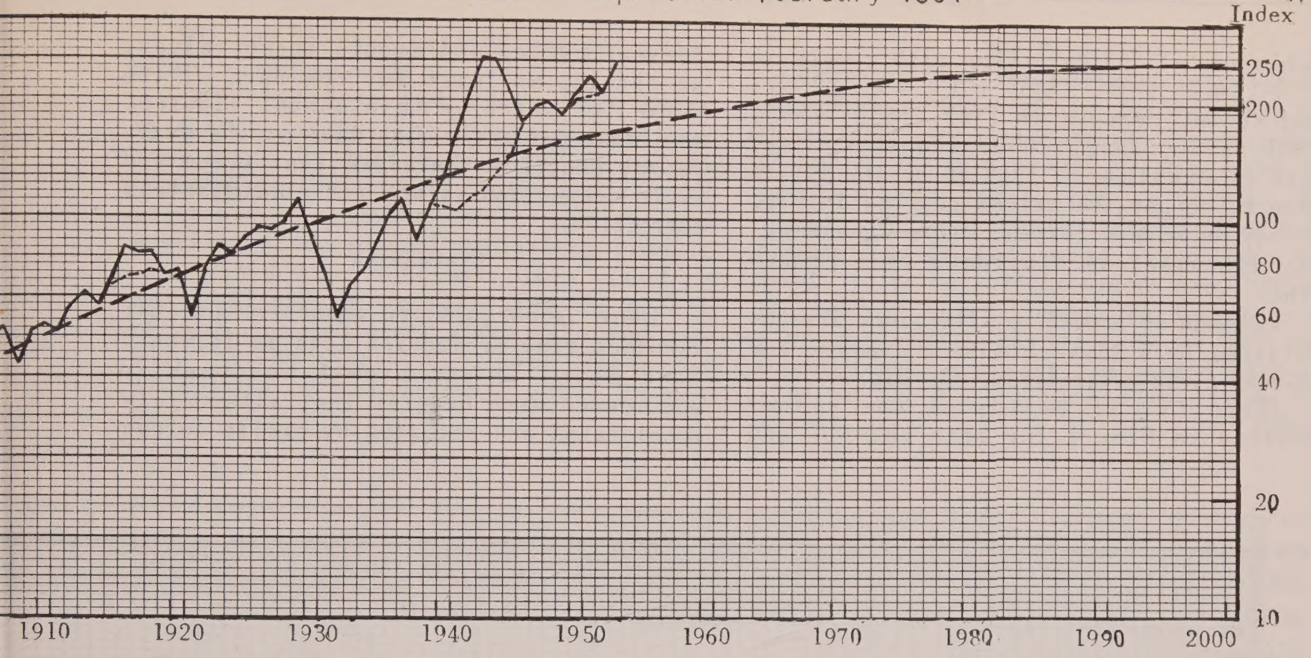


Fig. 1. INDEX OF MANUFACTURING PRODUCTION, U.S.A. 1809—1953.
TOGETHER WITH TREND.

Solid line shows actual index; decennial values, 1809—1959, annual values, 1863--1953.
Broken lines, 1914—1919, 1939—1946, and 1949—1952 show values adjusted for war.
Dashed line shows trend. Ratio scale.



Trend

First of all, let me discuss the assumed trend: The characteristics that seemed, for preliminary purposes, to fit trend best are as follows: An F.R.B. Index value of .052845 for 1799. A growth rate of 229.7% from 1799 to 1809. Rate of growth decreasing uniformly at the rate of 4.2255% each decade thereafter up to the present moment.

Fig. 1 shows the index of manufacturing production 1809 to date together with a trend of the characteristics described above. It is on ratio scale.

Fig. 1-A on page 45 shows the same values on arithmetic scale. In Fig. 1-A the two major cycles have been added also.

The difference between arithmetic scale and ratio scale has been explained time and again in these pages. When you want to study cycles or trend you use ratio scale, in which the scale values get closer and closer as they get bigger in such a way that equal relative scale values are equally spaced (8 is as far above 4 as 4 is above 2, for example, because 8 is twice 4 just as 4 is twice 2). When you want to study *absolute* values, you use arithmetic scale.

Fig. 2 shows deviations from trend with both actual and hypothetical values for the war years of 1915-18, 1940-45, and 1950-51. The broken line in Fig. 2 shows the composite pattern of the 50-year and 36-year cycles to be discussed below.

The 36-Year Cycle

Fig. 3 shows the values charted in Fig. 2 adjusted for a perfectly regular cycle of zig-zag shape (when plotted on ratio scale) 50 years long with crests in 1803, 1853, 1903, 1953, and so on, troughs in 1828, 1878, 1928, 1978, and so on, and with an amplitude of 119% at crest and 84% at trough.

There are many irregularities due to shorter cycles and random numbers, but the 36-year cycle can be seen clearly. It has been diagramed by a broken line.

The irregularities can be largely eliminated by means of a 25-year moving average of the values adjusted for war as charted in Fig. 3. This has been done. The results are charted in Fig. 4. The 36-year cycle becomes even clearer.

The 50-Year Cycle

Similarly, if we adjust the values plotted in Fig. 2 for a perfectly regular cycle of zig-zag shape (when plotted on ratio scale) 36-years long with crests in 1775, 1811, 1847, 1883, 1919, 1955, 1991, and so on, troughs in 1793, 1829, 1865, 1901, 1937, 1973, 2009, and so on, and with an amplitude of 121% at crest, 82% at trough, we get the values charted in Fig. 5. Now we have a 50-year cycle remaining. It, likewise, is diagramed by a broken line.

If again we smooth out the minor irregularities by a 25-year moving average the 50-year cycle crystalizes. See Fig. 6.

Finally, if we adjust the values charted in Fig. 2 for both the 50- and 36-year cycles and smooth these values, we obtain, at least for the part of the curve for which we have annual figures, an almost perfectly flat line at the axis. We may conclude therefore that trend and cycle correction values are approximately correct.

Evaluation

There is *no question whatever* but that manufacturing production acts as it would have acted if its growth had been in accordance with orderly law, alternately accelerated and retarded by cyclic forces

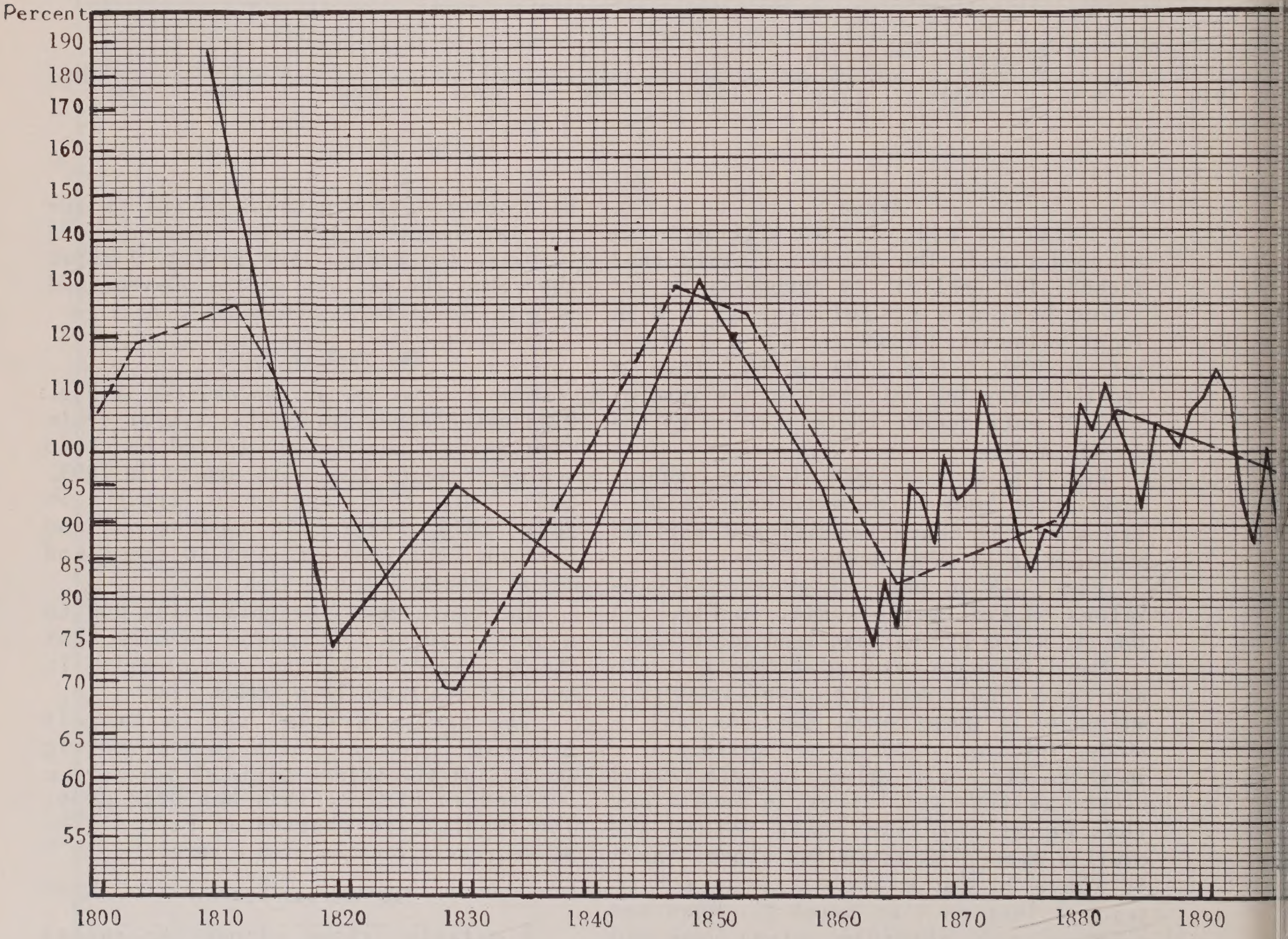


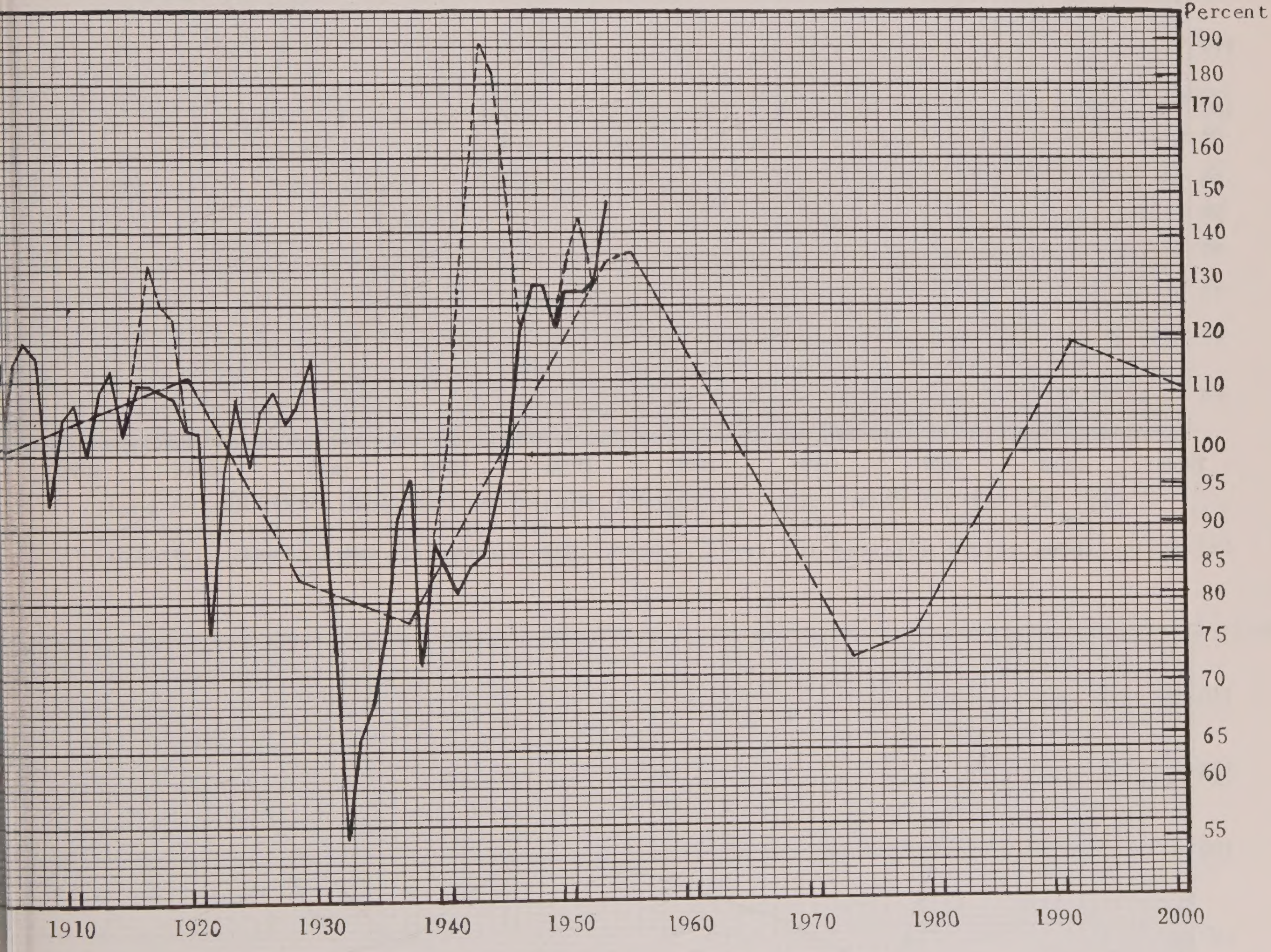
Fig. 2. FLUCTUATIONS IN MANUFACTURING PRODUCTION, U.S.A., 1809—1953.
Solid line shows figures adjusted for trend and for war. Broken lines 1914—1919,

of 50- and 36-year periods respectively, acting simultaneously.

But that does not prove that there were such forces. The behaviors may have come about by accident. I may be merely postulating two regular cycles and a trend to create an irregular pattern which fits a series of accidental variations brought about by I know not what. This could be so. I *believe* we are observing the effect of real forces—forces which will continue and, barring a major war, will create the framework of our future, but I do not *know*.

The Future

Assuming that the observed behavior is significant, what of the future? This is discussed in my letter to members on pages 43 and 44 of this issue. No more need be said at this point than to repeat the final words of that letter: One, any depression in the immediate future is likely to be relatively minor; two, during the next 20 years, booms are due to have a progressively harder time of it, and three, sometime during the period 1964 to 1986 we are due to have a really major depression. *E.R.D.*



1939—1946, and 1949—1952 show values adjusted for trend but not adjusted for war. Dashed line shows combination of 50- and 36-year cycles. All values are percentages of trend. Ratio scale.

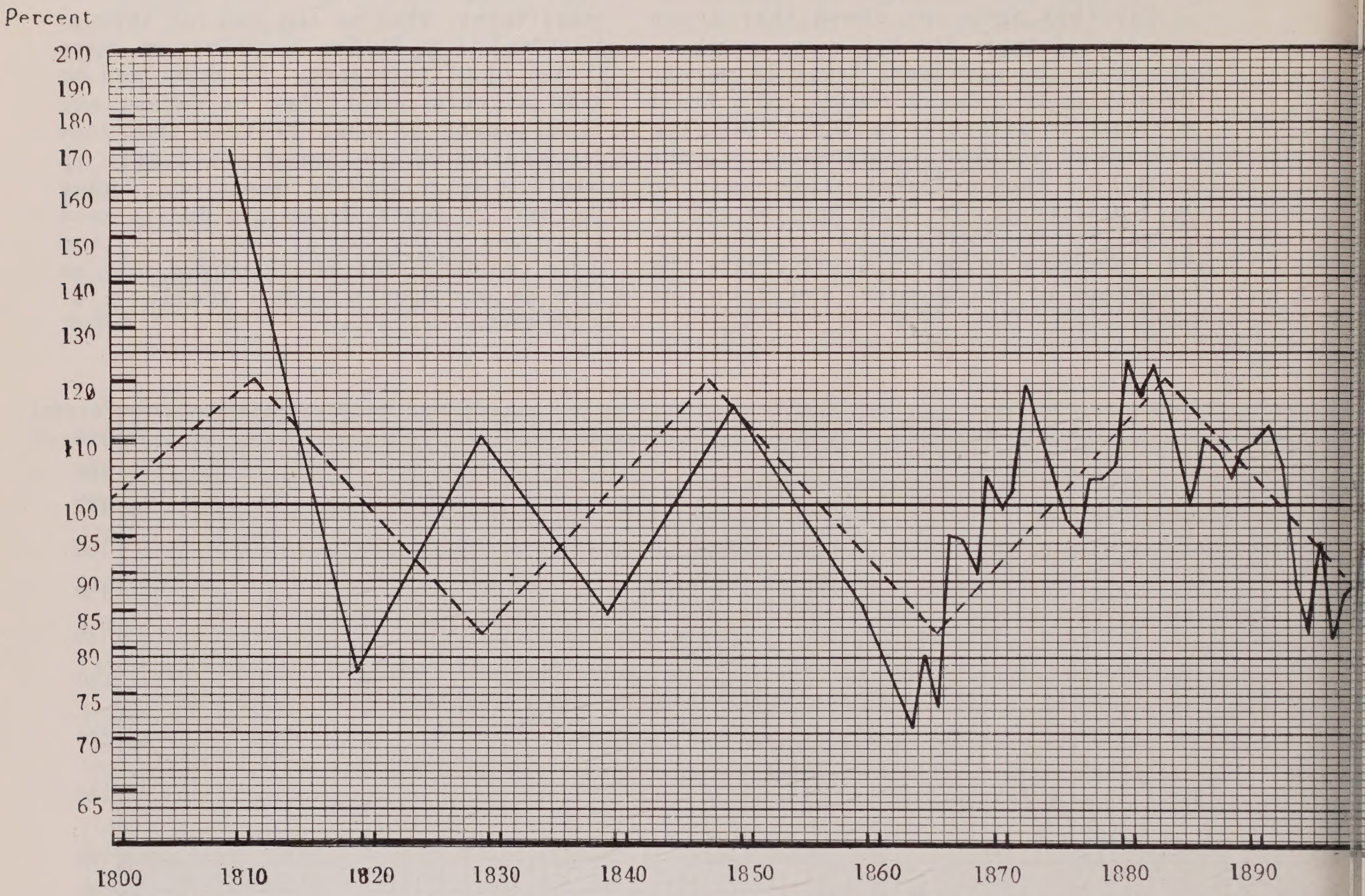


Fig. 3. THE 36-YEAR CYCLE IN MANUFACTURING PRODUCTION SMOOTHED.

Solid line shows values adjusted for trend, for the 50-year cycle, and for war. Broken

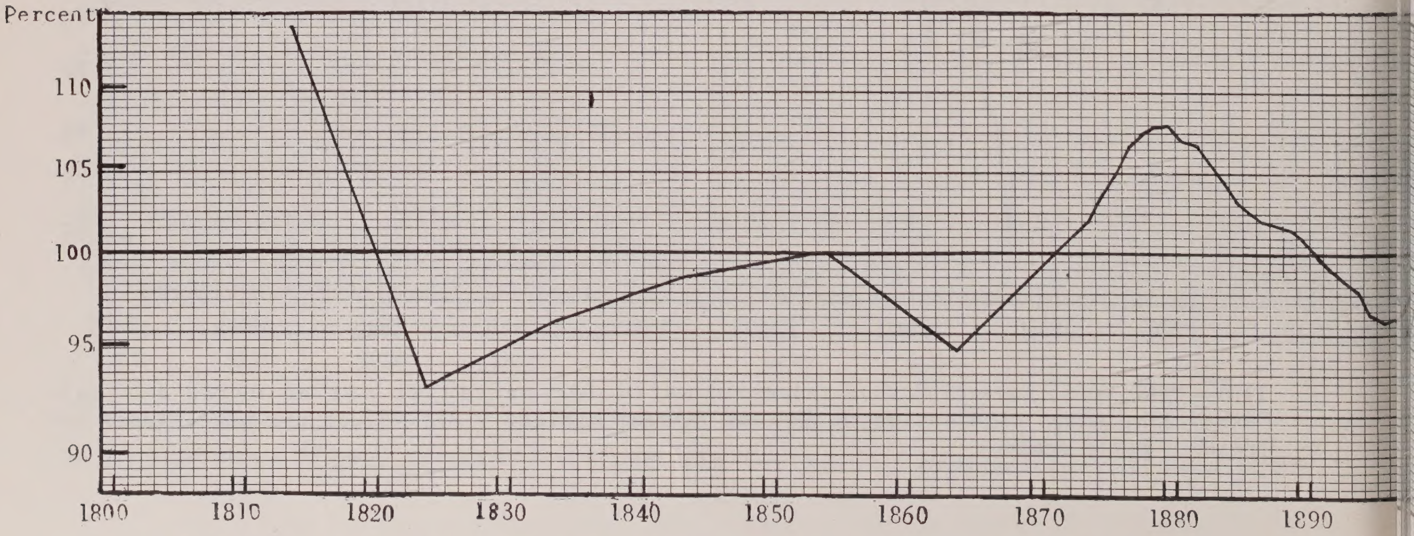
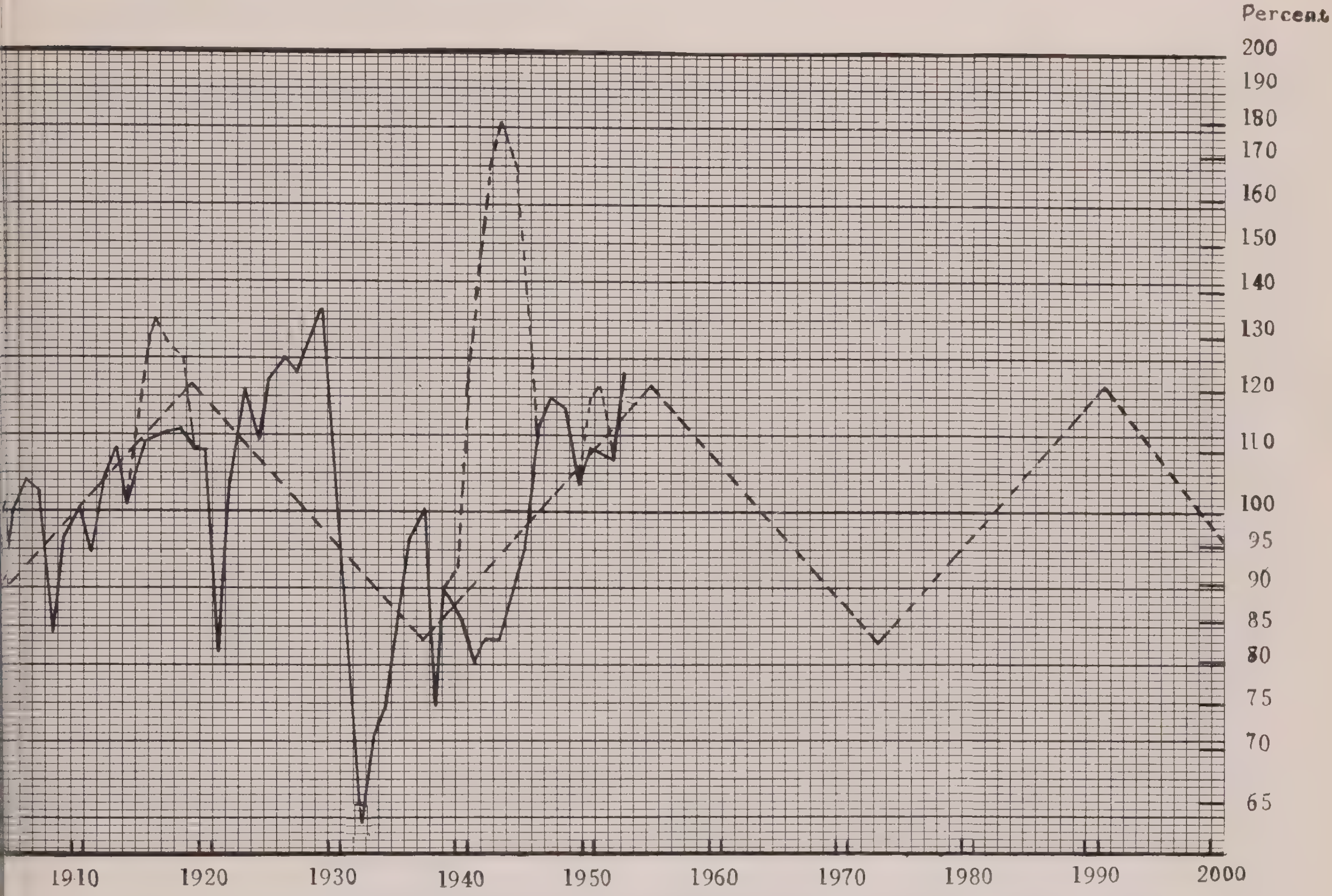
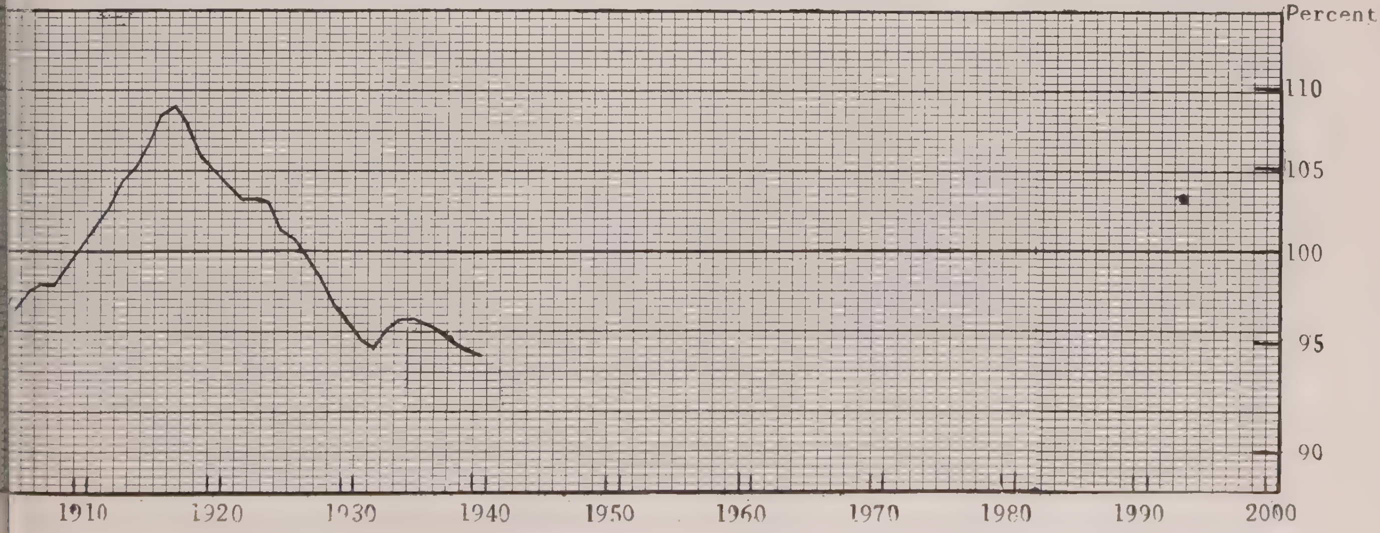


Fig. 4. THE 36-YEAR CYCLE IN MANUFACTURING PRODUCTION, SMOOTHED

This chart shows the values in Fig. 3 smoothed by a 25-year moving average (consecutive decennial values averaged). Ratio scale



lines 1914—1919, 1939—1946, and 1949—1952 show values adjusted for trend and for 50-year cycle, but not adjusted for war. Dashed line shows ideal 36-year cycle. All values are percentages of trend. Ratio scale.



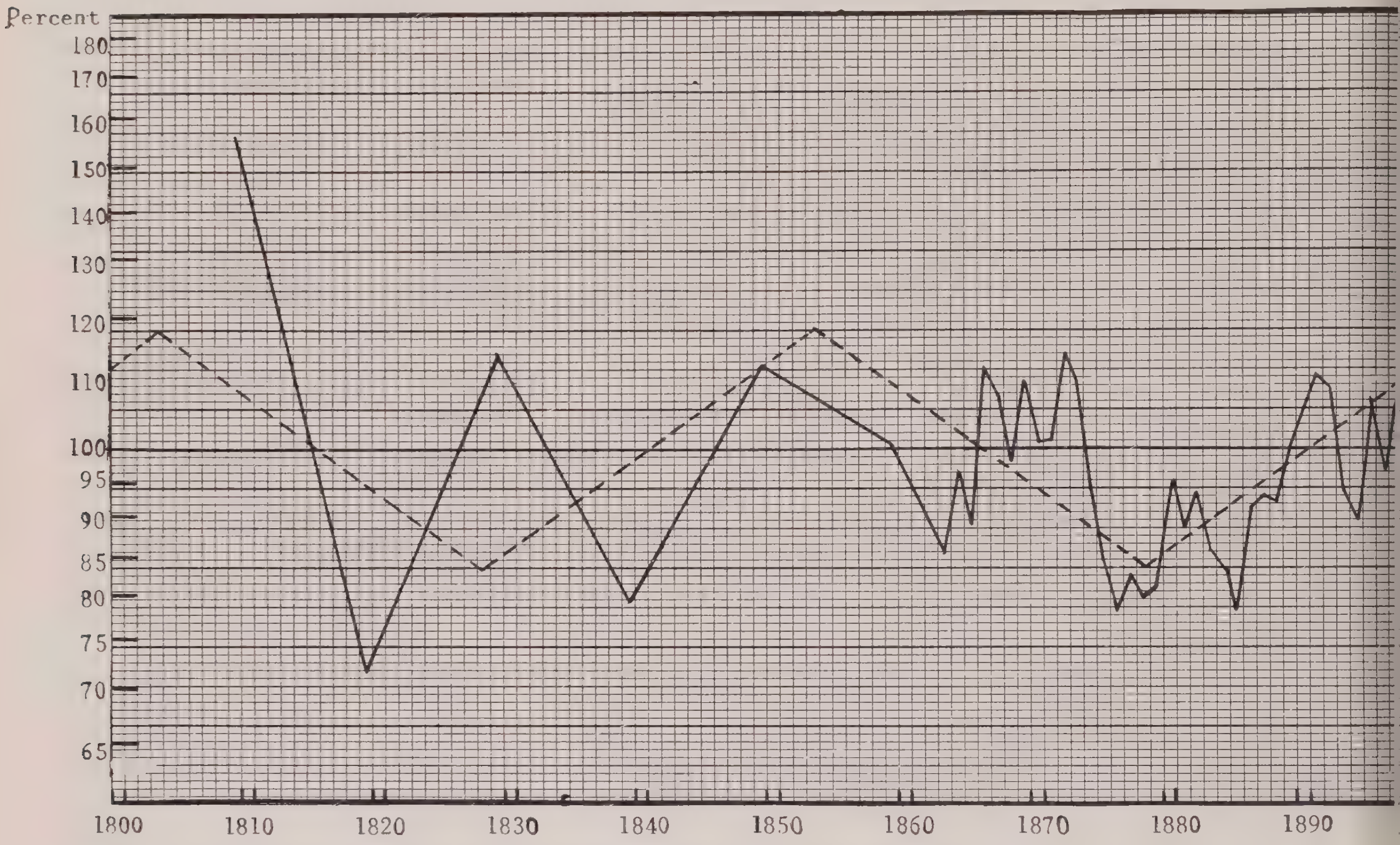


Fig. 5. THE 50-YEAR CYCLE IN MANUFACTURING PRODUCTION, 1809—1953.

Solid line shows values adjusted for trend, for the 36-year cycle, and for war. Broken

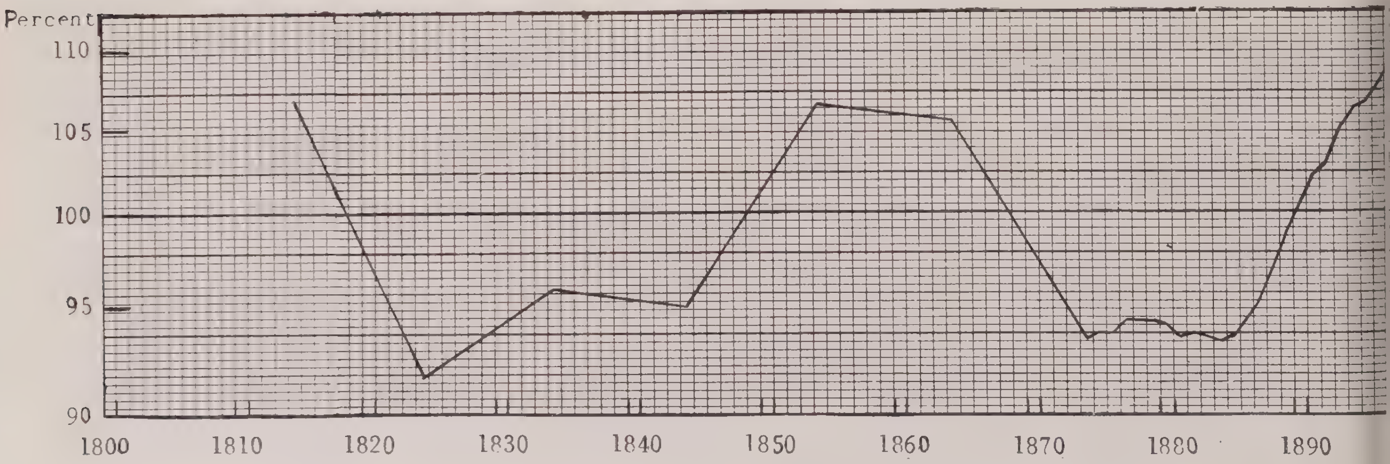
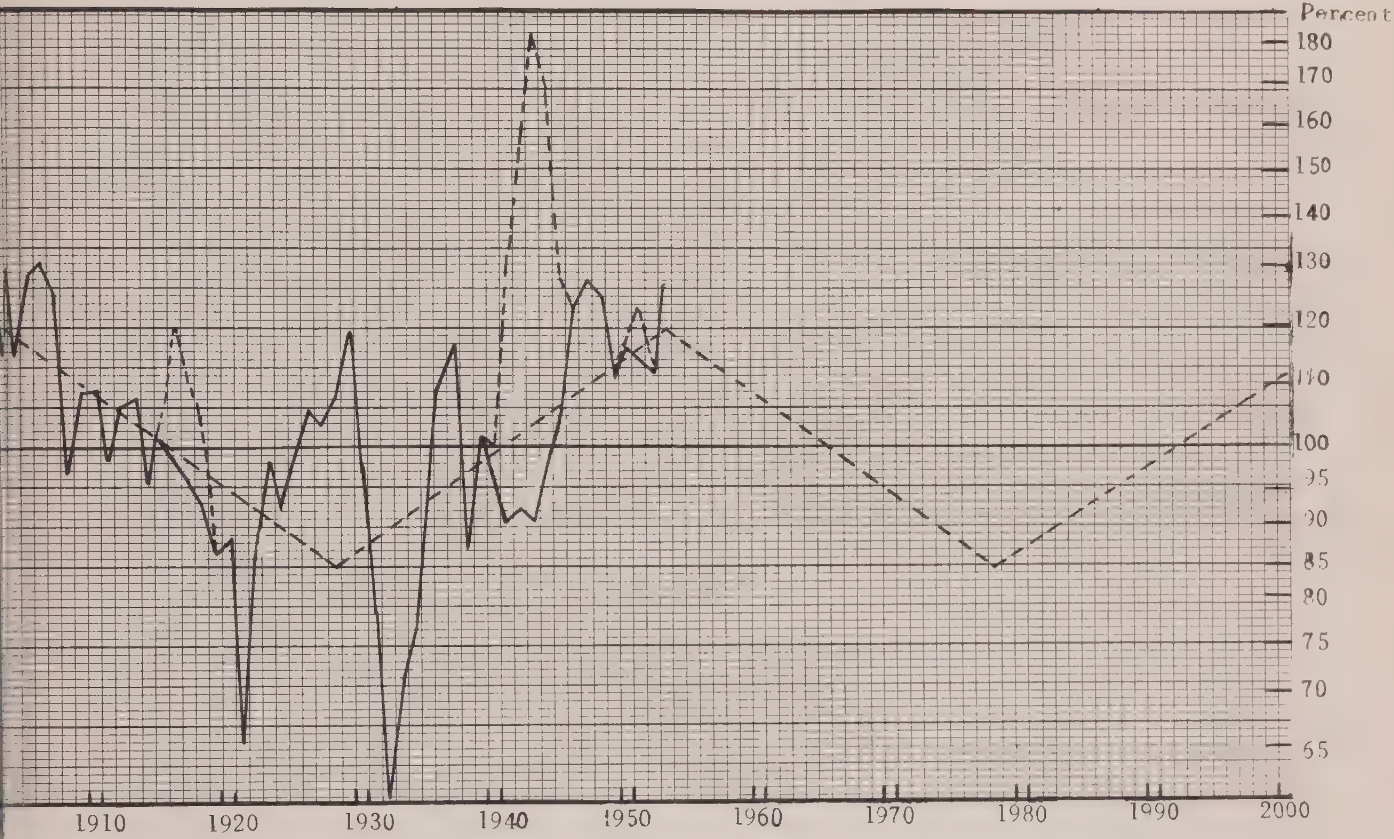
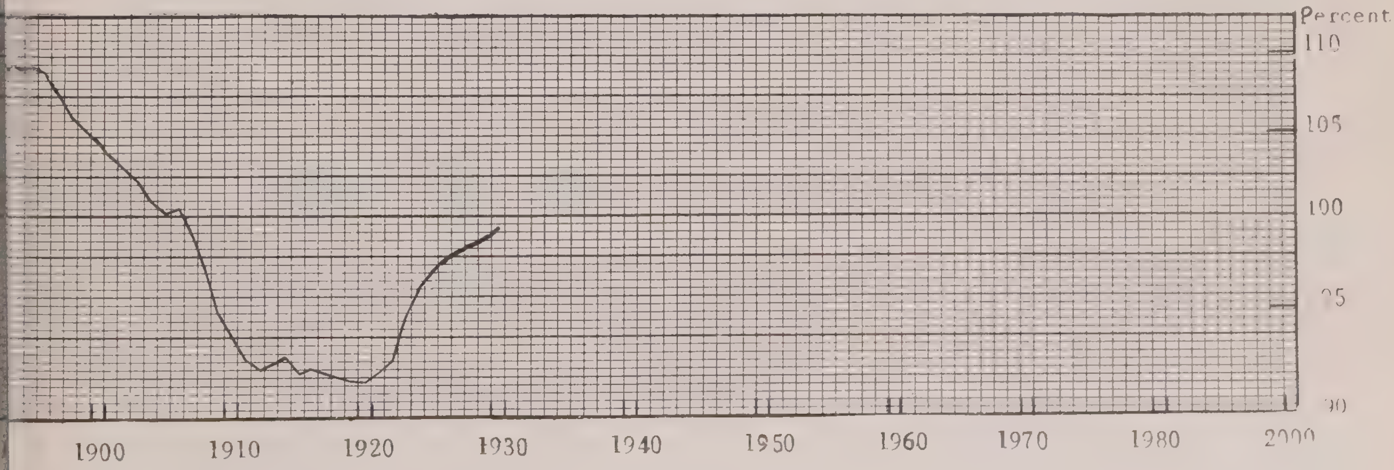


Fig. 6. THE 50-YEAR CYCLE IN MANUFACTURING PRODUCTION, SMOOTHED

This chart shows the values in Fig. 5 smoothed by a 25-year moving average (consecutive decennial values averaged). Ratio scale



lines 1914—1919, 1939—1946, and 1949—1952 show values adjusted for trend and for 36-year cycle but not adjusted for war. Dashed line shows idealized 50-year cycle. All values are percentages of trend. Ratio scale.



THREE MINOR STOCK MARKET CYCLES

RECENT research indicates three minor cycles in stock prices which are 27.5 months, 29.2 months, and 31.0 months long respectively.

The data in which these cycles were found were the Clement-Burgess Index 1854--1870, and the Standard Poor's Corporation Industrial Index, 1871 to date. The Clement-Burgess Index is made up largely of prices of railroad stocks.

The 27.5-Month Cycle

The 27.5-month cycle has an overall amplitude (from crest to trough, or vice versa) of 4.2%. It crests ideally early in July of 1952 and 27.5 months forward and backward from that time.

The 29.2-Month Cycle

The 29.2-month cycle is more important. It has an overall amplitude of 7.1%. It crests ideally at year end 1952, and 29.2 months forward and backward from that time.

The 31.0-Month Cycle

The 31.0-month cycle has an overall amplitude of 7.2%. It crests ideally in mid-June of 1951 and forward and backward 31.0 months from that date.

A diagram of each of these three cycles and their synthesis for 1953, 1954, and 1955 is printed below.

Significance

Significance For You:

1. The fact that these cycles have repeated so many times (43, 41, and 38 respectively) should enhance your faith in the dependability of cycles.

2. The length and timing given should be of help in case you find cycles close to these lengths in the figures in which you are interested.

3. As for providing foreknowledge of the market itself, the information can be used in either one of two ways: (a) actuarial and (b) directional.

(a) **Actuarial**: The amplitudes of the three cycles indicate average annual gains, exclusive of taxes and brokerage of 3.66%, 5.83%, and 5.55% respectively. When all three cycles are in step with each other, average annual gains would exceed 15% a year, if all cycles have been correctly determined, and if they continue in the future as in the past.

It does not seem to me that this gain is enough to warrant using these cycles for trading purposes, particularly at the present time when they largely offset each other. Moreover, it takes over two years for a round trip. I have therefore not taken the time to figure buy-sell tables to show maximum losses, runs of losses, and other similar facts needed before one embarks on an actuarial program.

Knowledge of these three cycles should be used, in my opinion, merely to *modify* an actuarial program based on shorter cycles.

(b) **Directional**: The most that can be said is, assuming that these three cycles continue in the future as in the past, the market will, in September of 1953, be 1.0% lower than it otherwise would be, in August of 1955 2 1/2% higher than it otherwise would be etc., month by month, as indicated in the chart. This is a small additional scrap of information to add to whatever you may already know about probable future market behavior.

Knowledge about weak cycles like these reminds me of the use of mace in oyster stew. Mace by itself is not very good to eat, but added to other ingredients it makes the whole combination better. I am sorry that these three cycles did not turn out to be butter or cream or oysters, but then you will notice that I devoted only two pages to all three of them put together.

Significance for Cycle Study:

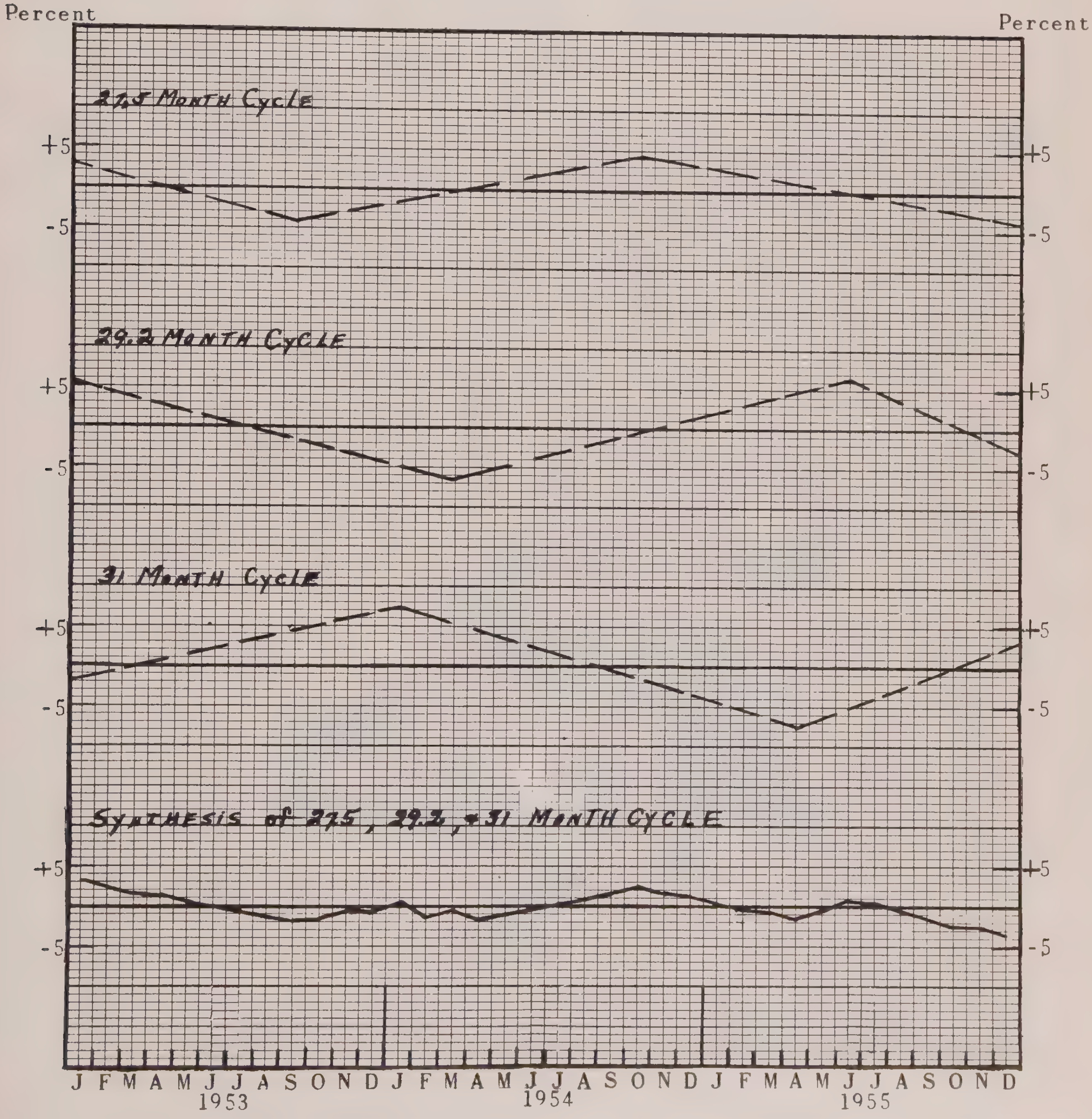
1. You will notice that the 29.2-month cycle is about 6% longer than the 27.5-month cycle, and that the 31.0-month cycle is about 6% longer than the 29.2-month cycle. Are there other cycles 6% longer (and shorter)?

2. Are there similar cycles in natural phenomena such as sunspots, weather, terrestrial magnetism?

3. Are these cycles present in other longer series of economic data such as commodity price? If so, do they persist back in the 1700's?

When questions such as these have been answered, we will be better able to evaluate the significance of the discovery of these three cycles in the stock market figures. In the meantime, it is important to add to our collection of cycles three more cycles which have been present over so long a period of time.

E.R.D.



Foundation Affairs

RESEARCH HEADQUARTERS

THE sketch reproduced below shows you the building which houses Foundation Research Headquarters. It is located near East Brady, Pennsylvania, about 55 miles north-north-east of Pittsburgh. Stop in sometime and say hello!

The house was built about 85 years ago —just about the time the 9-year cycle was first being observed by Samuel Benner of the United States and by Clement Juglar of France. It was my boyhood home.

I have turned the downstairs over to the research staff of the Foundation. My wife and I live upstairs. If the Foundation grows much more we will have to move into the garage! *E.R.D.*

Research Headquarters of the Foundation for the Study of Cycles

BENNER'S PROPHECIES

OF

FUTURE UPS AND DOWNS IN PRICES

By

Samuel Benner

EXCERPTS FROM A BOOK PUBLISHED IN 1876

FOUNDATION FOR THE STUDY OF CYCLES

FOREWORD

Back in 1875 a self-styled Ohio farmer named Samuel Benner copyrighted a book called **Benner's Prophecies of Future Ups and Downs in Prices**. Part of this book is reprinted in the following pages. For the convenience of the reader, and to preserve our usual format, four pages of Benner's book are combined to make one page of supplement.

The entire book of 131 pages was reprinted by the Foundation for the Study of Cycles as Foundation Reprint Number 24. The excerpts printed here are those referring to cycles in pig iron prices. The sections deleted are concerned with cycles in the prices of hogs, corn, and cotton and the cycles of panics.

Imaginary purchase and sale, and short sale, of pig iron according to the Benner formula from 1875 up to World War II would have shown 12 profitable transactions—two unprofitable ones.

The loss for the two unprofitable transactions was 9.3%, or an average of 4.6% per transaction. The gain for the 11 profitable transactions, not including the rise from 1915 to 1918 incident to World War I, was 288.5%--an average of 26.2% per transaction. If you include the rise from 1915 to 1918, the gain was 425.8%, or an average of 35.5% per transaction. If you start your imaginary trading in 1872, the date of high called for in Benner's formula, instead of in 1875, the year of copyright, your 12 profitable transactions would have shown 461.2% for the period, or an average of 38.4% per transaction. Looked at another way, the gain-loss ratio from 1875 through 1935, not including the rise due to World War I was 31 to 1; including World War I 44.8 to 1; and starting at 1872, in accordance with the formula 49.6 to 1.

Since 1935 however, Benner's forecast has fared badly. First of all the next projected low fell in 1942, a year of war. The next high, scheduled for 1945, was a year of price control. And 1951, the current year of low has run afoul of still another war and of the "Fair" deal with its 40¢ dollars.

But we do not need to provide Benner with alibis. He himself recognized that there were fractional years involved in his pig iron cycles, "but not sufficient fractions in any cycle within the last 40 years, **and will not be before 1891** [bold face supplied], to change the number of years in any high priced year cycle of pig iron."

In my opinion, Benner's forecast of pig iron prices is the most notable forecast of prices in existence.

Edward R. Dewey

BENNER'S PROPHECIES

OF

FUTURE UPS AND DOWNS IN PRICES.

WHAT YEARS TO MAKE MONEY ON PIG-IRON, HOGS, CORN, AND PROVISIONS.

By SAMUEL BENNER,
An Ohio Farmer

"I know of no way of judging of the future but by the past"
—PATRICK HENRY.

Price $1.00

CINCINNATI:
Published by the Author
1876

Entered according to Act of Congress, in the year 1875,
By SAMUEL BENNER,
In the Office of the Librarian of Congress, at Washington, D. C.

Chase and Hall, Publishers,
Cincinnati.

Stereotyped at the Franklin Type Foundry,
Cincinnati.

DEDICATED

TO THE

AGRICULTURAL, MANUFACTURING, MINING, MERCANTILE, INDUSTRIAL, FINANCIAL, AND COMMERCIAL INTERESTS OF THE UNITED STATES OF AMERICA.

There is a time in the price of certain
products and commodities,
Which, if taken by men at the advance,
leads on to fortune;
And if taken at the decline, leads to
bankruptcy and ruin.

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PREFACE.

IN the following pages the object of the writer is to give brief, full, and clear exposition of the ups and downs in prices for certain products and commodities in the markets of our country, to all who are struggling in the same for a competence.

To foresee the future intelligently in regard to supply and demand, production and consumption, is the great want that finance and commerce are to-day struggling and grappling with and striving to solve.

The question of prices will always be of great interest to the producer and consumer. The spirit of the age is tending toward speculation in the products of the "Farm, the Mine, and the Factory." All business operations for profit and future contracts are attended with a great deal of risk, and the leading branches of trade demand information on the subject, and that the uncertainties of the future be lessened.

There is always a hesitancy and a desire for further intelligence, in regard to engaging in any business where the chances for profit depend upon so many contingencies and circumstances.

The author, in presenting a practical book to the public on the subject, and on the branches of trade of which it treats, is inspired with the belief that it will be the greatest boon to the reader to have the years of high and low prices pointed out in the future.

It should be the highest aim of the farmer, manufacturer, and trader, in a business point of view, to penetrate the future and calculate what years he can realize the best prices for his products.

Content to be useful, instead of being voluminous, the writer has confined the book to a few of the most important branches of trade. To have extended the work to the dimensions of embracing other branches would have made it more copious than the designed brevity of the book would admit.

It is hoped that to this volume will be accorded the merit of directing more attention to the ups and downs in prices, and the causes producing and influencing the same.

And now, submitting the results of our labor, experience, and observation to the industry and commerce of the country, the author's wishes will be fully realized if this little volume contains any information which may be useful or of service to those interested

INTRODUCTION.

THE advance and decline in the average price of pig-iron, hogs, corn, and provisions in the markets of our country, for a series of twenty years past, and for certain periods, have been as alternately certain as the diurnal revolutions of the earth upon its axis; and the periods of high and low prices have been as regular in rotation, as the annual return of the four seasons.

Now, READER: You who may study the ups and downs in prices as collated and considered in these pages, and operate in accordance with the advance of prices and tendencies of the times, as here indicated, will surely be successful; whilst those who stubbornly and blindly prosecute on the decline, will do an unprofitable business, and will meet with continued disaster and loss.

I am well aware that my prediction of the downward tendency in the prices of pig-iron, hogs, corn, and provisions, and dull trade for the next two years, will be to some as unwelcome as the tolling of the-fire bell at the hour of midnight; and to others as unexpected as was the approach of the Medes and Persians, under the walls of Babylon, to the banquetors at the royal board of Belshazzar; but we can not be blamed for foretelling that which can not be averted and which past prices, and signs of the times indicate, and which a conscientious conviction of duty compels us to predict, with the hope that our premonition may serve to diminish disaster and save national and individual interests from ruin.

I now at once make my predictions, and will endeavor to demonstrate their certainty and fulfillment to the comprehension of all, by an examination of past prices, and their bearing upon the future, as analyzed by the light of practical experience and sound analogy.

PREDICTIONS.

PIG-IRON.

I PREDICT *that* the average price of **No. 1 foundry charcoal pig-iron in the markets** of our country will be lower in the year 1876 than in 1875.

I predict *that* the average price of No. 1 foundry charcoal pig-iron in the markets of our country will be lower in the year 1877 than in 1876, and *that* the daily price in some months of that year will run below twenty dollars per ton.

I predict *that* the average price of No. 1 foundry charcoal pig-iron in the markets of our country will be higher in the year 1878 than in 1877.

I predict *that* the average price of No. 1 foundry charcoal pig-iron in the markets of our country will be higher in the year 1879 than in 1878, notwithstanding the resumption of specie payments.

I predict *that* the average price of No. 1 foundry charcoal pig-iron in the markets of our country will be higher in the year 1880 than in 1879.

I predict *that* the average price of No. 1 foundry charcoal pig-iron in the markets of our country will be higher in the year 1881 than in 1880, and *that* the daily price in some months of that year will run above fifty dollars per ton.

The average prices as determined for the "American Iron and Steel Association."

HOGS.

I predict *that* the average price of fat hogs in the markets of our country will be lower in the year 1876 than in 1875.

I predict *that* the average price of fat hogs in the markets of our country will be lower in the year 1877 than in 1876.

I predict *that* the average price of fat hogs in the markets of our country will be higher in the year 1878 than in 1877.

I predict *that* the average price of fat hogs in the markets of our country will be higher in the year 1879 than in 1878, notwithstanding the resumption of specie payments.

I predict *that* the average price of fat hogs in the markets of our country will be higher in the year 1880 than in 1879.

The average prices as determined by the "CINCINNATI PRICE CURRENT."

PANIC.

I predict *that* there will be great depression in general business, and many failures in the years 1876 and 1877, and *that* there will be a commercial revulsion, and a financial crisis in the year 1891.

Here are twelve prophecies of certain events to take place in the future, and they are of no uncertain sound; either one of them, if taken advantage of, by large operators and speculators, would make and save them millions of money, and would be of incalculable benefit to every person in this country. To know *when* to shape our agricultural, manufacturing, and financial operations, so as to secure the best markets instead of the worst, is the end much to be desired by all.

These prophecies are made not upon supposed fanciful speculation, but from the testimony of twenty years' observation by the writer, from living and experienced facts; from the yearly average prices compiled by recognized official authority, and by analogy, relying upon "history to repeat itself."

The writer does not claim a "gift of prophecy," but he does claim a *Cast Iron Rule* that will do to keep in sight, and that future ups and downs of the markets, and high and low prices in certain products and commodities, can be calculated for some years to come with as much certainty, and upon the same principle that an astronomer calculates an eclipse of the sun.

It is not upon record that Joseph had Egyptian weather statistics, or tables of production and prices, to base his prediction and interpretation of Pharaoh's dream; but he relied upon divine power to *fulfill* his prophecy. On our part, we base our predictions upon the records of the past, and their relation to the future, as governed by the unchangeable laws of nature, and only rely upon providence for their *fulfillment* to give us the continued regular progress and development of these laws, and to its usual dispensation for seasons to make large or small crops, and not on the peoples' efforts merely.

The author firmly believes that God is in prices, and that the over and under production of every commodity is in accordance with his will, with strict reference to the wants of mankind, and governed by the laws of nature, which are God's laws; and that the production, advance, and decline of average prices should be systematic, and occur in an established providential succession, as certain and regular as the magnetic needle points unerringly to the pole.

Are not all kinds of business at loose ends—astray, tossed on the tempestuous sea of uncertainty—from our imperfect knowledge of natural causes and the laws by which they operate; and our lack of accurate statistics of production and prices, a knowledge of which would enable us to discover and establish reliable rules for our guidance in the future? Is there any thing certain and settled in farming, except that a broom-handle is a sure cure for hoven in cattle! Are not farmers, furnace-men, manufacturers, traders and speculators at random, like a ship without compass or rudder? Do not all operations in business depend for success upon a certain number of fixed, reliable rules? The rules we have to commence and transact business upon are stereotyped rules, that "HONESTY is the best policy;" that industry, energy, perseverance, prudence, economy, and so on, lead to riches and competence. These are all good enough in their line, and indispensable to success, but are they all sufficient? Is this knowledge all that is absolutely required for successful business in every department of trade? Is there not a knowledge of something more which a business man wants? And who is not a business man? In order to guide him in reference to future prices that are to rule in the markets of our country, we can not close our eyes and ignore the fact that there is a want of rules by which to interpret the "signs of the times," and to enable us to comprehend the future status of the markets, so we may know six months or a year ahead what are to be the conditions and circumstances that will produce the coming ups and downs in prices for any product or commodity, and when the changes from high and low prices are to take place.

How are we to get this information, this insight into, or foresight of the future?

Do the Records of the Weather Give the Rule?

In seeking to forecast future prices of agricultural products, the weather is an important element of uncertainty. With the rapidly increasing means of observation, and the deep interest taken by governments and scientists every-where in the laws of climate, the development and path of storms, nature of calms, theory of winds, movements of masses of hot and dry air, and the phenomena of rain and snow, we may in time learn to calculate with certainty what years will be dry or wet; when we may expect years of heat, storm, and cold; but with all the weather statistics of the past, tables of meteorology, and not excepting the weather wisdom of almanac makers, it will not come within the province of this work to lay down rules by which to forecast the future of the weather. It will require time, research, with improved means, and a more complete series of meteorological and climatological observations to form a system of probabilities that can be useful; and when the weather probabilities are reduced to a science, it will then be a long step to determine agricultural productions and prices from them; and if the time should come when the weather bureau at Washington can predict twelve months ahead instead of twenty-four hours, we can then know in advance what the seasons are to be, the number of bushels or pounds of any thing to be produced, what prices will rule; and we can all make money.

It will not be one of the points of this book to determine the *causes of things*, or the conditions and elements which will produce the coming ups and downs in prices; with these questions these prophecies have nothing to do; it will only come within its sphere to ascertain and point out the periodical return of effects, in the changes from high and low prices.

We know the effects as manifested in the ups and downs of average prices, and good and bad trade, and it seems as though there ought to be an established cause to produce results of so much certainty, periodicity, and alternate regularity.

The difficulty encountered in determining the causes producing the changes in production and prices is, that we are compelled to reason *a posteriori*, from effect to cause, and "what can we reason but from what we know." All original causes are invisible, and that which is rendered visible through development is an effect; the cause must exist antecedent to the effect. The manner in which causes and their laws operate to produce these effects may be found in our solar system, upon which we hereafter give some theories. All nature is found to be the servant of law: spring, summer, autumn, and winter succeed each other in unchangeable regularity, and the recurrences of the various convulsions of nature are being determined on scientific principles; none of these things happen by chance, but all of them by some law which will shortly be solved; and when the causes producing the changes in the weather, and the operations of their laws are better understood, we may be then better able to discover their influence on the state of business in manufacture, trade, and commerce; then we may be enabled to fathom the conditions and elements that will produce the coming ups and downs in prices which are to rule in the markets of our country.

Do the Statistics of Production Give the Rule?

To ascertain when the changes from high and low prices are to take place:

Who is it that can tell us what is to be the production of corn, cotton, wheat, tobacco, or any product that grows from the ground, and is dependent upon the season for the life or death of the plant? No one; after they have gathered and collected all the information obtainable in regard to the acreage to be planted or sown, the seasons make large or small crops, and not the farmers.

A cold, wet spring through the months of April, May, and June, is almost fatal to the corn, cotton, tobacco, and other plants. Also a dry, hot summer, has the effect to destroy the growing stocks. Floods and early frosts are great destroyers of the cereals in our northern latitudes; either one of these elements operating diminishes the number of pounds or bushels, and produces short crops; therefore, we can not beforehand determine what will be the production of any year by that which has been planted or sown.

Statistics of agricultural products or manufactured commodities are generally too late to be available for present use; they come after a person has made their investment or disposed of their property. Agricultural statistics, as generally compiled at Washington, tell the farmer the aggregate amount or number of bushels produced six months or a year after their crops have been harvested and sold.

Statistics of production, either estimated or sold for consumption, are not sufficient to operate upon; one is too soon, the other too late.

Commercial estimates are too high.

The future can not be calculated upon intelligently by agricultural statistics. The reason why they are not reliable is, that they are not given in by farmers correct: one farmer will think it has something to do with taxes, and he will give them in low; another, to magnify the yield of his farm, and other purposes, will give them in high; therefore, they can not be a criterion for future calculation and prices.

Again, statistics of what has been produced may vary considerably from the available supply. We can not make any correct estimate or compile any statistics of what has been done with a crop. The corn crop of one year may not feed more than two-thirds of the stock that the crop would of another year.

Statistics of foreign exports are not to be depended upon. The estimated aggregate amount of the yearly production of any crop or manufactured commodity, does not from year to year approximate any regularity of increase or decrease that indicates future production; and therefore the course of future prices can not be determined by them.

Statistics are generally huge columns of figures, of which no one knows all the channels from whence they came, all the clerical errors in their compilation, and parties interested in their manipulation.

In attempting to explore and explain the elements in these statistical tables and problems of which people think are few and easily read, the real supply and demand will be as unfathomable as the waters of the briny deep.

Does the Price Give the Rule?

The price of any product is the exponent of the accumulated wisdom of the country in regard to the available supply and prospective demand for that product; and as the price advances or declines, so it indicates the surplus or deficit of any product or commodity.

The daily price is always known in the markets. There may be incidental causes, which are always producing slight and temporary fluctuations in value. The variation in price in one locality from another may be found in the cost of transportation or other local causes. The price is always known; the amount of any product and the demand for the same, is not so easily obtained. The books are always posted in regard to price, but several pages behind on amount of product available and the demand for the same. The price is the index of the probable amount of any product or commodity that is demanded for general consumption.

The price which an article will command to-morrow or next week can not always be known, as there are so many contingencies to cause temporary fluctuations in the markets. One or more of the various products may be manipulated so as to influence the price to advance or decline for a short time, but speculators can not influence any market only temporarily.

It is not within the wisdom of finite beings to comprehend all the temporary circumstances connected with prices, as governed and influenced by supply and demand, weather and seasons, combinations and corners, longs and shorts, puts and calls, and bulls and bears to operate upon the market.

Now as the temporary price is uncertain, let us look further into the subject of prices to find a rule, and take the average to ascertain if there is any regularity existing in the run of the markets. As prices of agricultural products are governed by production, and production is governed by the seasons, and as it takes the four seasons to determime the abundance or scarcity of a crop; therefore we are compelled to take the yearly average price to get above and beyond the control and influence of speculators, manipulators, and corners upon the market.

The yearly average price is ascertained by taking the price each day, week, or month, at one or more of the markets where the articles are bought and sold, and by adding the whole together, and then dividing by the number of times taken, the quotient will give the average for a year.

When the yearly average price is very low for any product or commodity, and next year advances, and so on until it reaches the highest average, is that which is here denominated an "*up?*" When the average price declines from one year to another to the lowest average, is that which is here denominated a "*down?*"

The "ups and downs" of yearly average prices, in a series of years for some articles, are very noticeable; and it can be observed that it takes a required number of years to complete an "up and down."

Now to find a rule that can give us any foresight of future markets, we must look to the past ups and downs of average prices; then ascertain how many years it takes to complete an up and down in any product or commodity, then determine in what order the ups and downs are repeated in the next cycle; and if there is found any noticeable periodicity in cycles, then we have a rule which can be applied to the future. An up and down or a down and up in average prices, is in this book denominated a cycle.

The cycles in yearly average prices

Gives Us The Rule.

The indubitable evidences and testimonies of observation have established this rule as the safest we have ever practiced and have ever found adapted to this purpose. And inside of this rule, like a wheel within a wheel, is to be found our "Cast Iron Rule," which is that *one extreme invariably follows another*, as can be witnessed in all the operations of nature, in all the business affairs of man, and in all the ramifications of trade and industry; and in every cycle of average prices it is shown to what extent these extremes run. This rule when applied to pig-iron, hogs, corn and provisions, is as persistent as the attractive and repulsive forces of the magnet, and as unchangeable as the laws of the Medes and Persians.

This knowledge of the years in which high and low prices return in the markets, belong to the farmer, manufacturer, and legitimate trader, as well as the speculator; and it is as important that this intelligence should be known to one as to the other.

The ups and downs in prices, as considered in this book, have reference to a series of years as distinguished from the daily and weekly fluctuations. War, panic, and elections have not changed the general yearly course of prices in some articles for many years past; and we only go back so far as we have been enabled to obtain reliable yearly average prices, or the official records of monthly prices at New York, and from them we can date their unfolding, and since that time establish by our rule the full development of our system of prophecy.

It is not necessary for us to look beyond the present century, or to the history of prices in older countries, for epochs of abundance and scarcity, to prove recurring cycles in prices.

The alternation of good and bad harvests is well known in English history. "Tooke" published a history of prices in 1838, giving an exhaustive analysis of the causes producing abundance and scarcity in crops in the eighteenth century, but did not establish any rule by which the future course of prices could be arithmetically calculated.

It is to the present nineteenth century, and in the land of free America, the most favored nation upon the earth, that divine providence has arranged this matter, for not only the spread of the true principles of religion and liberty, but the full development of the operations of the unchangeable laws of nature around and about us.

The battles of Lexington, Concord and Bunker Hill, the centennial of which we celebrated in 1875, was the commencement of our struggles for freedom from the tyrannical yoke of England. The War of 1812 was the final consummation of our independence in the arts and sciences, commerce and politics; and the period in our history after which we can date the development of the reaper and mower, sewing-machine, grain elevator, power loom, cotton gin, stereotype, steam printing press, railroad, steamboat, electric telegraph, the compilation of average prices, new elements and sciences, and a multitude of inventions and discoveries for the advancement of man in his onward path of progress, and in the knowledge of the ways of an inscrutable providence.

Now instead of pondering over farmers' deliveries, weekly receipts, visible supplies, and entering into an expensive collection and elaborate examination of statistics of what the probable production of pig-iron, corn, and hogs will be, and the commercial demand for the same, and what old elements will be wanting and new ones to be developed, and watching and waiting to hear from New York, let us call history to the witness stand, and see what it has to testify on the subject; and also bring into court the testimony of observation and experience, by taking the course of the averages in past markets, as compiled by reliable and official authority; and also the years in which money has been made and lost in the different branches of trade, and then by our rule make the application for the future

PIG-IRON.

The following statement, prepared by Hon Henry C. Carey, in 1849, embraces all that is definitely known of the progress of the iron industry in this country prior to 1854.

Mr. Carey's Pig-iron Statistics.

In 1810 the whole number of furnaces in the Union was 153, yielding 54,000 tons of metal, equal to 16 pounds per head of the population.

In 1821 the manufacture was in a state of ruin.

In 1828 the product had reached 130,000 tons, having little more than doubled in eighteen years.

In 1829 it was 142,000. Increase in one year nearly ten per cent.

In 1830 it was 165,000. Increase in two years more than 25 per cent.

In 1831 it was 191,000. Increase in three years about 50 per cent.

In 1832 it was 200,000, giving an increase in three years of above 60 per cent.

In 1840 the quantity given by the census was 286,000, but a committee of the Home League, in New York, made it 347,700 tons. Taking the medium of the two, it would give about 315,000 tons, being an increase in eight years of 50 per cent.

In 1842 a large portion of the furnaces were closed, and the product had fallen to probably little more than 200,000, but certainly less than 230,000 tons.

In 1846 it was estimated by the Secretary of the Treasury at 765,000 tons, having trebled in four years.

In 1847 it was supposed to have reached the amount of not less than 800,000 tons.

In 1848 it became stationary.

In 1849 many furnaces being already closed, the production of the present year can not be estimated above 650,000 tons; but from the accumulation of stock, and the difficulty of selling it, it is obvious that the diminution will be greater.

The above statement, it will be observed, is only statistical in regard to production, although it is stated that in 1821 the manufacture was in a state of ruin; and in 1842 a large portion of the furnaces were closed. This probably was in consequence of low prices that prevailed at this time.

In the report of the Secretary of the Treasury for 1863, the only official source for average prices since the war of 1812, or the panic of 1819, and prior to 1844, that I am able to obtain, is, however, sufficient for our purpose;

it is recorded that 1825, '26, and '27 were years of very high prices in pig-iron; after these years the price declined, the tariff of twelve and one half dollars per ton was reduced in 1833, and in the year 1834 the price had declined to a very low figure for that time. Business was depressed in all branches of trade; the aggregate amount of duties on all imports were the lowest that had been collected for many years before that year; this date is forty-two years ago, and I commence my table of the ups and downs in prices of pig-iron at this time.

The finance report of 1863, in giving prices for the New York market, states that in 1836 there was a material rise in prices in all articles, especially pig-iron, which is quoted at sixty dollars per ton; and in 1837 the price advanced to seventy dollars per ton for Scotch pig, which was an extremely high price, and three years from the low prices of 1834.

The panic in money caused the suspension of specie payments by the banks in May, 1837, yet the price of pig-iron had commenced to decline in March of that year, before the panic had cast its blighting shadow over the country.

In the years 1838, '39, '40, '41, and '42 the price continued to decline, and 1843 was a remarkable year for the extreme depression in prices that prevailed for all staple articles. Scotch pig was quoted in September of that year as low as twenty-two and one-half dollars per ton; this low price was six years after the high prices of 1837.

In the year 1844 the price commenced to advance, and in 1845, in the month of May, the price is quoted at fifty-two and one-half dollars per ton. The price had increased thirty dollars per ton in twenty months. The maximum price was reached in a few months less than two years from the minimum price of 1843—mark this!

Yearly average prices in Philadelphia of No. 1 Anthracite foundry pig-iron, from 1844 to 1874, both years inclusive; and production of pig-iron from 1854 to 1874 as compiled for the American Iron and Steel Association.

TABLE OF YEARLY AVERAGE PRICES.

YEAR.	*PRICE.*	*TONS.*
1844	25¾	
1845	29¼	
1846	27⅞	
1847	30¼	
1848	26½	
1849	22¾	
1850	20⅞	
1851	21⅜	
1852	22⅝	
1853	36⅛	
1854	36⅞	736,218.
1855	27¾	784,178.
1856	27⅛	883,137.
1857	26⅜	798,157.
1858	22¼	705,094.
1859	23⅜	840,627.
1860	22¾	919,770.
1861	20¼	731,544.
1862	23⅞	787,662.
1863	35¼	947,604.
1864	59¼	1,135,996.
1865	46⅛	931,582.
1866	46⅞	1,350,343.
1867	44⅛	1,461,626.
1868	39¼	1,603,000.
1869	40⅝	1,919,641.
1870	33¼	1,865,000.
1871	35⅛	1,912,608.
1872	48⅞	2,854,558.
1873	42¾	2,868,278.
1874	30¼	2,689,413.

The following are the high and low priced years in which are the highest and lowest monthly averages, which shows when the changes commence in the ups and downs of the markets for pig-iron.

In Finance Report the highest daily price in 1837, was, in January, 70 dollars per ton. In report of the Secretary Iron and Steel Association, the highest monthly averages are as follows:

1845, May, 34⅛ dollars per ton.
1854, June, 38 " "
1864, August, 73⅝ " "
1872, September, 53⅞ " "

The Finance Report gives the lowest daily price for 1834, in April, 38 dollars per ton; for 1843, in July, 22½ dollars per ton.

In report of the Secretary Iron and Steel Association, the lowest monthly averages are as follows:

1850, July, ... 20 dollars per ton.
1861, October, . 18⅝ " "
1870, December, 31¼ " "

After the high priced year 1845, the price of pig-iron declined, and in 1846, '47, '48, '49, it continued on the downward scale; and in 1850, the average by the table is 20⅞ dollars per ton, making five in number of declining years since 1845, and recording severe depression in the iron trade, following the depressions of 1834 and 1843.

Our war with Mexico in 1846, '47, '48, and the influx of gold from California, did not have the effect of changing the direction of the price of iron, as it continued to decline during the war and after peace was declared. After the year 1850 the price again advanced in 1851, '52, '53 and in 1854, the price reached the high average of 36 dollars per ton, making four years of advances from 1850.

The uncertainty of all manufacturing business, especially the manufacture of pig-iron, for the want of general knowledge when the periodical decline in price is to commence—of which it seems our sharpest and most experienced men have made mistakes, as serious and fatal as persons of less pretensions, experience, and business qualifications—is exemplified in the following:

The *Iron King* of the Hanging Rock iron region in Ohio, in the year 1854, was so led astray by success and fortunate operations in making pig-iron, as to order wood chopped and ore mined the fall and winter of that year, sufficient, it was claimed, to run a certain furnace the succeeding year "*thirteen months out of twelve.*" As pig-iron at fifty dollars per ton would make all furnace owners rich, it was surely the veritable "Alladin's Lamp," and it was only necessary for furnace men to touch King Pig-iron and, "*mirabile dictu,*" up would come the oriental genii with untold wealth. But alas! what of the times? Had the chances been studied, or were furnace men courting the "delusive phantom of hope" and blindfolding themselves?. What did the balance sheet of that year show? A loss of fifteen thousand dollars. And why? Because the price of pig-iron had tumbled in obedience to the effects and mandates of that uniform, universal and inexorable law of over-supply and under-demand.

There were a host of furnace men at that time whose thoughts were in the same channel, and who claimed that iron was the scepter to wield and control the commerce of the world; and demanded fabulous prices for their furnace property, ignoring and forgetting the records of past history, that iron has its ups and downs like other articles of manufacture; and that its power to control is as potent on the decline as when on the advance. And in that year 1855, without their consent and beyond their control, and in accordance with an established natural rule, their pig-iron was left "high and dry," and as time glided along in the seven succeeding years, their property would not sell for one-half the sum that before a reasonable price demanded. The business became prostrated, and furnace men lost stacks of money; the great majority of owners were compelled to realize on their stacks of pig-iron and sacrifice their furnace property to keep out of bankruptcy. The price continued to decline to the year 1861. The writer knew of merchantable hot blast charcoal pig-iron selling as low as thirteen dollars per ton during the winter of 1860 and '61, in the city of Cincinnati. The seven years from 1854 to 1861 were very disastrous to the iron trade, and prostrated more furnaces than any period of declines in the history of this country.

The commercial reaction and financial difficulty of 1857, produced a general calamity; paralyzed the hand of industry and cramped the energies of the people for four long continued years after that revulsion.

In the fall of 1860 the banks of Baltimore, Philadelphia, Richmond and other southern cities suspended, and in the spring of 1861 the war of rebellion burst upon us like a clap of thunder in a clear sky, creating terrible disturbance in all the ramifications of business, stopping the wheels of commerce and producing general consternation and stagnation in the iron trade.

I assert it here as a stubborn fact, as showing my faith in these cycles, that if the war of rebellion had commenced in 1854 or in 1864, the general course of prices for pig-iron would have been downward in the following seven years after 1854 and the following six years after 1864, succeeding the same *condition to eras* as the price after 1845 declined five years during the Mexican war of 1846, '47 and '48; however, the price would not have ruled so low in 1861 and 1870 as it did in 1850. And I also assert as an unquestionable fact, that if we had not have had the war of rebellion from 1861 to 1865, the price of pig-iron nevertheless would have advanced in the years 1862, '63 and '64, although the price would not have reached so high an average as it did in these years.

These assertions coincide with our remarks heretofore, that war, panic, and elections do not change the general course of prices in their cycles; however, it may be that war and commercial revulsions are coincident with the advance and decline of the price of pig-iron in the present century. Now, again we have seen the price decline in 1865, '66, '67, '68, '69 and '70. Six years of decline, although the averages do not run so low as they did from 1854 to 1861.

Again the price takes the ascending scale in 1871, and scarcely two years from the minimum price of 1870 reaching the maximum in 1872, when the average of forty eight dollars is recorded. Mark this advance, and remember the twenty months' advance from 1843 to 1845! The present cycle commencing with the advance of 1871 and '72, and continuing with the declines of 1873, '74 and '75, brings us up to the present year 1876.

In the table of yearly average prices for the year 1847, the price is higher than in 1846. The Financial Report gives the price lower in 1847 than in 1846—there appears this discrepancy between these two authorities. Also for the year 1858 the price is lower than in 1859; which probably was occasioned by the panic in the fall of 1857, depressing the price in 1858 for a short time below its natural and proper position. And in 1865 we also notice the price depressed a fraction below the price of 1866. And again, in 1868 the price is lower than in 1869. These irregularities in the years of declines, if not errors in compilation, are likely effects of accidental and temporary causes. In the years of advance in the price of iron, we have none of these irregularities.

It has been within the experience and observation of the writer; and as for himself requires no authority for the information that the price of pig-iron was very high in the years 1837, 1845, 1854, 1864, and 1872, and that these years were the highest priced years since 1834; and also that the iron trade was severely depressed in the years 1834, 1843, 1850, 1861, and 1870, and that these years were the lowest priced years since 1834.

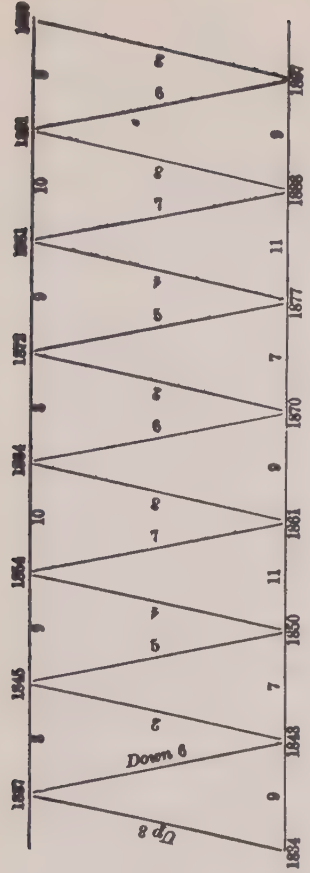
Now we have our data; having traveled over the facts in a voyage of discovery and secured our evidence, let us form our cycles and see if we can make out a rule. Commencing with the low priced year, 1834, we have stated that the price advanced three years to 1837; declined six years to 1843, making a cycle between low prices of nine years. Again the price advanced two years to 1845, and declined five years to 1850, making a cycle of seven years. Again advanced four years to 1854, and declined seven years to 1861 making a cycle of eleven years. Again advanced three years to 1864, and declined six years to 1870, making a cycle of nine years. Again advanced two years to 1872, and declined three years to 1875.

It will be noticed that the years of advances are as follows: 3, 2—4, 3, 2. The declines are 6, 5—7, 6, and 3, up to the present, denoting that the present declines are not full by two years, of which it is necessary to have a cycle of seven years in its order between low prices. Unless history in detail does not repeat itself, the future can not be judged by the past, and all human calculations as to cyclical movements in prices are as naught; and there is not any thing sure and certain for man at the present day and age but death and taxes.

We have so far but three years of decline from the high prices of 1872, and if the cycle of seven years, from 1843 to 1850, is to make its periodical return, and be repeated in its natural order of two years of advance and five of decline, then the cycle of seven years between low prices in its order is to be filled up from 1870 to 1877; and, therefore, we must have two years more of decline after 1875 to fill up the cycle, and we have no doubt but that "history will repeat itself" here as it has done in other cycles which will verify and establish the accuracy of our prophecy.

Let us return to 1837, after which there are six years of decline to 1843, and two years of advance to 1845, making a cycle in high prices of eight years. Again the price declines five years to 1850, and advances four years to 1854, making a cycle of nine years. Again the price declines seven years to 1861, and advances three years to 1864, making a cycle of ten years. Again declines six years to 1870, and advances two years to 1872, making a cycle of eight years. Again declines three years to 1875, requiring two years more of decline, and four years of advance to make a cycle of nine years, the next cycle in its order, which cycle in high prices ends in the year 1881, this year will be the next highest priced year for pig-iron.

The following scale will enable the reader to better understand the different cycles in high and low prices, and the order in which they return.



THE PAST.

	UPS.		DOWNS.
3	1835 1836 1837	6	1838 1839 1840 1841 1842 1843
2	1844 1845	5	1846 1847 1848 1849 1850
4	1851 1852 1853 1854	7	1855 1856 1857 1858 1859 1860 1861
3	1862 1863 1864	6	1865 1866 1867 1868 1869 1870
2	1871 1872		1873 1874 1875

THE FUTURE.

	UPS.		DOWNS.
			1876 1877
4	1878 1879 1880 1881	7	1882 1883 1884 1885 1886 1887 1888
3	1889 1890 1891	6	1892 1893 1894 1895 1896 1897
2	1898 1899		

At the bottom of the scale is shown the lowest priced years, 1834, 1843, 1850, 1861, 1870; and in the future 1877, 1888, and 1897.

At the top are the highest priced years, 1837, 1845, 1854, 1864, and 1872; and in the future, 1881, 1891, and 1899.

This scale shows that the cycles of the lowest priced years are in a decreasing series of arithmetical progression, and in the order of 11, 9, 7, and repeat. The cycles of the highest priced years are in an increasing series of arithmetical progression, and in the order of 8, 9, 10, and repeat. Also we observe that the price of pig-iron advances and declines in a decreasing series of arithmetical progression, the advances in the order of 4, 3, and 2 years, and repeat; the declines in the order of 7, 6, and 5 years, and repeat.

Since 1834 and including 1875, the price of pig-iron has declined twenty-seven years, and advanced fourteen years, making the ratio of declines to the advances as two to one. The present cycle ending in 1877, will complete five cycles in low prices since 1834; the five cycles in high prices will be completed in 1881. The return of the commencement of the different cycles in their periodical order is twenty-seven years, one-half the ordinary life-time of man.

On page 45, the year of advances are grouped together, under the head of ups; and the years of declines under the head of downs for the old series, and continued in the future for the new series. We are now in the cycle of seven years between low priced years, and at the beginning of the fourth year of declines in this cycle, two more years will complete this cycle, and also the old series of the ups and downs.

In the year 1878 we shall enter a new series of ups and downs; the advances commencing with four years, and declines with seven years, making a cycle of eleven years in low prices. Also we are now in the cycle of nine years in high prices, and in 1881 the present high priced year cycle will be complete, and end. And after 1881 we shall enter the cycle of ten years in high prices, completing this cycle in 1891.

In the years 1878, 79, '80, and '81, the price of pig-iron will be on the ascending scale, the *iron trade will again be prosperous*, and in these years, especially the last two, 1880 and 1881, money will be made very fast in this business, unless trammeled by unwise legislation **upon the currency and tariff; and in the year 1881, in the months of September and October, the price will be at the highest. After these months in that year, the price will have a downward tendency and begin to tumble, and it will be fortunate for all persons who may be readers of this book, and may regulate their business affairs according to the light here shown, to close out their investment at a good price in that year, and it would be to the interest and benefit of our whole country if our iron men, statesmen, and others, would only take advantage of this information, which would be the means of placing more real money in the pockets of the people and coffers of the nation, than the wonderful alchemy at Washington, which is invoked by politicians to transform old rags into beautiful yet numberless greenbacks.**

When the iron trade is depressed, so is trade in every department of manufacture dull and unprofitable. It is to the interests of TRADE UNIONS to ponder and well consider these predictions; as upon their certainty, their losses by strikes for higher wages, or to maintain former rates in these years of decline could be averted, by knowing the unchangeable tendencies of the times.

We have in the beginning predicted that the daily price in 1877 will run below twenty dollars per ton; and in 1881 above fifty dollars per ton. The inspiration that directs this prediction is found in the fact that "one extreme invariably follows another," and that the daily price runs below twenty dollars per ton in all the low priced years, and above fifty dollars per ton in all the high priced years.

The years 1882, '83, '84, '85, '86, '87, and '88, will be years of decline in the price of pig-iron, and years of depression in this business. These seven years of decline will be a repetition of the seven years from 1854 to 1861. We have had but one of these seven year declines since 1834, and it would be to the benefit of this country if we should never have another; however, the writer is compelled by the rule of cycles to point it out in the future, and warn the iron trade of this *impending danger.* And we proclaim it, to all who may be readers of this book, and engaged in any way in the iron trade, to be prepared after the year 1881 for breakers ahead!! What we have to say on these cycles in prices we are positive of, and we may as well, right here, state that this is a positive book.

In the repetition of these seven years of decline, which these cycles surely indicate, every furnace in this country will be slaughtered, unless backed by large capital and ability to stand great loss, or hold their iron, stop their furnaces, husband resources, and wait for better times, as pointed out in these pages. These declines will not encounter a general panic, as did the former seven year declines in the panic of 1857, or the present five year declines in the panic of 1873; and, therefore, they will be more gradual.

In the years 1889, '90, and '91, the price of pig-iron will be on the advancing scale again, and will be three years reaching the highest price in 1891. This will be a period of money making in the iron business, and these will be three years of general prosperity in all departments of trade and industry.

After 1891 the price of pig-iron will decline for six years, and these declines will again be disastrous to this business; in fact, all business will be on the same retreating road to hard pan, as they are in this year, and will be in the next, as the iron and other trades and industries after 1891 will be under the effects of a commercial and financial revulsion, as shown hereafter under the head of "Panic."

The writer now claims that his showing in the preceding pages of past prices in pig-iron, the cycles between high and low priced years, and their periodical return, has a legitimate bearing upon the future, that no one can gainsay, and no human knowledge can contradict; the predictions are based upon sound analogy; their fulfillment is demonstrated to a certainty; and that time will surely verify the prophecies.

The changes of the ups and downs in prices and cycles in the iron trade are periodical and not hap-hazard, and succeed each other in a gradual and natural order.

After the price of pig-iron has declined from the high price of fifty dollars per ton down to as low as thirty dollars per ton, the saying that then is the time to invest in the iron business, is the "*ignus fatuus*" that has swamped the iron men of this country in not having a clear conception of the number of years in which the declines continue.

We can not determine when the price of any product or commodity is at the highest or lowest by the knowledge of when prices begin to rise or fall; we can only determine that by the number of years in the ups and downs comprising each different cycle in high and low prices.

I will record here some axioms which must be admitted, because they are self-evident.

That prices are high when they are above the cost of production on a declining market.

That prices are low when they are below the cost of production on an advancing market.

When the price of an article declines below cost, production will diminish until demand increases and prices advance.

When the price of an article advances above cost, production will increase until demand ceases and prices decline.

And that the cost of production is the wages of labor, interest on capital, and wear of land and machinery.

When the price of pig-iron is thirty dollars per ton, it may be either high or low, and like a certain game with cards, the points depend upon the trumps that are out.

If the cost of production is above on a declining market, then thirty dollars per ton is high; if the cost of production is below on an advancing market, then thirty dollars per ton is low.

The ratio of advance in price exceeds the ratio of increase in cost of production, and there is money made very fast in the iron business during the 2, 3, and 4 years of advance in price.

On the other hand, the ratio of decline in price exceeds the ratio of decrease in the cost of production, and furnaces lose money on the 5, 6, and 7 years alternately of the decline in price, unless wages and expenses are curtailed in time.

To apply our Cast Iron Rule, when the price of pig-iron has been as high as fifty dollars per ton, the price in the succeeding years has invariably declined to twenty dollars per ton; and, *vice versa*, when the price has been as low as twenty dollars per ton, the price afterward, in a certain number of years, has advanced as high as fifty dollars per ton.

The iron business is a very uncertain trade for persons to engage in who are not acquainted with the number of years in which the price advances, as they are only from two to four years, while the declines are from five to seven years.

The enormous home production and excessive importation of foreign iron in 1871 and 1872 produced a break in prices, and with the over production of 1873 and 1874, and the panic of 1873, the iron trade is again prostrated.

To persons not acquainted with the rules by which these changes occur, as regulated by an overruling providence, it is to them a wonderful illustration of the peculiarities of trade and the uncertainty of prices, as attempted to be explained by our limited knowledge of supply and demand.

In the spring of 1872 the country was prosperous and advancing beyond all past history; railroads were extending their lines across the continent in every direction, marking the most gigantic railroad expansion the world ever beheld; creating an unprecedented demand for iron, giving an impetus to the manufacture thereof, that had no parallel in the history of this or any other country, running the production to nearly three millions of tons in that year. All at once comes a snap and a crash: a reaction sets in so speedy and terrible, so general and decided, that we become amazed at the mysterious workings of this trade and the decrees of an all-wise Providence.

The decline in the price of pig-iron since 1872 has been over fifty per cent.

Iron masters are crying out, "Give us protection or we are ruined," while the silent whisper to "reduce the product" is not willingly and generally heard. The Secretary of the Iron and Steel Association reports that out of 701 furnaces on the first of February, 1874, there were 398 stacks out of blast; nevertheless there were fifty new furnaces completed in 1873, thirty-eight in 1874, and forty-six stacks in the course of erection, and other new furnaces projected in 1875. What blindness and what folly!!

The remedy at present is not to be found in a tariff alone on foreign importation; a home competition is here in our midst more formidable than all foreign competition combined. Seven Hundred Furnaces, some of which cast *one hundred tons of metal per day*, are ready to swell the home production on the first show of an advance in price, beyond the most extraordinary consumption, and producing stagnation more disastrous than ever.

It is a hard alternative for furnace men to be compelled by the "logic of facts and events," to blow out their furnaces and suspend business for so long a time, but to be "forewarned is to be forearmed;" is it not the part of wisdom and policy to stop before the capital is gone and stock unprofitably consumed?

We have not seen, in our experience or observation, neither do the facts and records of modern history show, a permanent advance until after five years from the highest price; and is the present decline and cycle to be an exception to all others? and in the face of, and succeeding the greatest supplying capacity the world has ever witnessed? and when other manufactures and trades, and all railroading is depressed and unprofitable, and when all Europe stands ready to supply any demand at pauper prices outside of this country?

Verily, the hand-writing is upon the wall, and so plain it needs no magi to decipher what it means.

* * *

[EDITOR'S NOTE: AT THIS POINT BENNER INTRODUCES SECTIONS ON HOG PRICES (PP. 56-76), CORN PRICES (PP 76-90), COTTON PRICES (PP. 90-95), PANICS (PP. 96-118), AND THEORY (PP. 118-125). THESE SECTIONS, EXCEPT FOR THE BRIEF EXCERPTS IMMEDIATELY FOLLOWING, HAVE BEEN DELETED FROM THIS SUPPLEMENT FOR LACK OF SPACE. THE READER WHO WISHES TO SEE THEM WILL FIND THE DELETED SECTIONS IN FOUNDATION REPRINT NO. 24, WHICH REPRODUCES THE ENTIRE BOOK]

This page, and the page following, consist of excerpts from pages 56 to 126 inclusive. The section "Conclusion" is reproduced entire. Ed.

Periodical revulsions do not in their effects change the general course of prices in their cycles, but they have a temporary influence to depress prices below their natural and proper position, and an after influence to keep down the averages to lower limits. If the people would only learn such years and stay out of this business, or confine themselves to smaller trade, when these declines in prices are to take place, especially after panic years, they would not complain so much of "hard times" and "high taxes." —p. 72

Speculating in hogs is generally with the majority a matter of *heads and tails;* when successful they are owlish wise, and of course know all about it; but when tails, then the "devil is in the *hog.*" —p. 75

The ups and downs in prices for corn, hogs, and pig-iron, and the activity and depression in general trade, are no doubt caused by an over and under production for a term of years, and the writer has an idea that these cycles in prices, which are so well defined, and repeat themselves with such surprising accuracy, are connected in some way with the cycles of nature, which are fixed because they are produced by regularly and permanently fixed causes, which are constant and uniform. —p. 88

Science will yet show that there is a reality in the connection between human events and the operations of nature; the causes and the laws by which they operate we are now ignorant of.

The cycles in panics and ups and downs in prices of agricultural and manufactured articles are but the effects of a cause, which is manifested in periods of sixteen, eighteen and twenty years in panics; that return in the same order every fifty-four years, in periods of eight, nine, and ten years in the price of pig-iron; which return in the same order every twenty-seven years, and down to five and six years in the price of corn and hogs; which return in the same order every eleven years; and by a series of observation in the future, the particular month and day could be ascertained when these changes in the ups and downs in prices will occur. When once these cycles are defined, ascertained, and calculated upon to a month and day, by a careful compilation of prices in each cycle, and the natural causes producing them discovered and verified, then their return can be calculated to continue in that exact order as long as other cycles in motion; as they are the effects of other motions, and will return with as much certainty and astronomical exactness, as the return of the eclipses of the sun and moon; and it does not require a belief in the fabulous to have faith in their periodical appearance. These cycles in the operations of cause and effect have always existed. There has been no confusion. Man has been continually making discoveries of the manner in which the laws of nature operate.

In my predictions I stated that 1876 and '77, would be years of great depression in general business, and that there would be many failures in these years; they will come at the end of the five years' decline in the price of pig-iron; and it does not require a gift of prophecy to foretell many failures in all of these years.

The "signs of the times" can be calculated by comparing 1876 and 1877 with other years after commercial panics, and the fall in the price of pig-iron—for instance, 1842, '43, and 1860, '61—and the state of business preceding these years, remembering that 1876 is presidential year, and that presidential years like 1820, 1840, and 1860, immediately succeeding commercial revulsions, are years of depression in business, the uncertainty of the times and of future legislation clogs the wheels of commerce and stops business. "Hard times" and "dull trade" are surely upon us for the next two years. The working man who depends upon his labor for his living, especially they who are engaged in the iron trade, surely have a dreary prospect—compelled by low wages to practice the most rigid economy in the necessaries of life, in the use of bad flour, black molasses, pressed shoulders, and store pay. And in the depression of the agricultural, manufacturing, and industrial interests, as they will be depressed all over the land in the next two years, the sting of hard times will come to every man's home.

In all these years of reaction and depression in general business, Providence works upon the minds of men, as witnessed at the present time by the religious excitement in the East, created by the evangelists Moody and Sankey, as instruments in the hands of God to start in motion a religious wave that will in the next two years sweep over the entire western country.—Men in time of trouble put more trust in God, and are inclined to more thoughtfulness. —pp. 111-114

When the period arrives for a panic, any breeze or signal, no matter what reverses the engine, the times take the downward grade, and there is no general recovery until we hear pig-iron demanding

“Watchman! what of the Night?”

This ideal will have been standing out upon the dome of the weather-beaten tower of time, gazing into the dim vista of the future, for five long years of disaster and ruin, waiting for the period foreseen and predicted, when the glimmer of the year 1878 can be discerned in the eastern horizon, not a meteoric flash which illumes the night with a transient and uncertain glow; but the continued morning radiance, which is the forerunner of the full light and glory of a bright noon-day—will then exclaim AROUSE, PIG-IRON! monarch of business! come forth from the chambers of thy slumbering silence, the dawn of a new era is at hand! hogs, corn, and cotton fall into line, and start in motion the wheels of commerce, industry, and trade!

The resumption of trade and industry in the year 1878 must go on; the Gibraltar of hard times will be passed in 1877; the mills and furnaces will start up; the price of pig-iron, hogs, corn, and provisions will be on the advance. Agriculture, manufacture, mining, commerce, and finance, will begin to prosper; the industries of all this country will be born of new life, and with our finances upon a sound basis, and a stop put to the enormous importation of foreign goods, that we can manufacture ourselves, which will give us the balance of trade, and enable us to keep our gold at home, and a general knowledge among the people of the duration of the ups and downs in prices, and when we may expect the return of commercial panics—this country with its forty millions of population, seventy thousand miles of railway, and two hundred millions of acres of cultivated land, will prosper and advance beyond any nation which has appeared in all ages of the world, and the chronicles of its future history, if well written, will rival the stories of oriental imagination. —pp. 116-118

The cycles of 11 years in the price of corn and hogs, 27 years in the price of pig-iron, and 54 years in general business, can not be accounted for upon any known theory in the operations of trade. Therefore we must look elsewhere for a cause and solution of the problem.

The fact of the existence of these cycles is patent to any close observer, and as to whether any hypothesis or theory would be of practical utility when not a demonstrated and *verified* truth, is for the reader to determine.

In our 11 year cycles commencing in 1836, and running to 1847, '58, and '69, we observe that our cycles fall behind the Jovial Cycle. We have not the daily or monthly prices for corn and hogs, so as to ascertain if there are fractions of a year in our cycles; if there should be, they would be found to be small. We know there are fractions in the cycles for pig-iron extending over four months from 1837 to 1845, and in other cycles from one to two months, but not sufficient fractions in any cycle within the past forty years, and will not be before 1891, to change the number of years in any high priced year cycle of either hogs or pig-iron. —p. 121

Facts are the data of all just reasoning, and the primary elements of all real knowledge. The fact seems to be philosophically certain that all the planets which compose our solar system are essential to that system: the sun to the planets, the planets to the sun, and all to each other; and when certain combinations are ascertained which produce one legitimate invariable manifestation from an analysis of the operations of the combined solar system, then we may be enabled to discover the cause producing our price cycles, and the length of their duration.

It is evident from our showing of the ups and downs in prices, and the high and low priced years, that these cycles repeat themselves in definite length; and without determining a fixed and exciting cause for their existence, or attempting to verify theories of which we are distrustful, we will risk our reputation as a prophet, and our chances for success in business upon our 11 year cycle in corn and hogs; in our 27 year cycle in pig-iron, and in our 54 year cycle in general trade, upon which we have operated with success in the past.

Modern facilities have brought the ends of the earth together, and nearly obliterated the cycles in famine and bread riots, but in turn have developed well defined cycles in prices. By the aid of steam and electricity, a deficiency in one part of the earth is soon supplied by the surplus of another; therefore, natural productions are more equalized over the country; and as the average aggregate yearly amount is regulated by productive and unproductive seasons, prices follow nature more closely than formerly, and their cycles must correspond very closely with meteorological cycles. —pp. 122-123

CONCLUSION.

In view of the immensity of the interests involved, and the magnitude of the gains or losses incurred in the advance and decline of each price and panic cycle, and the consequences of the effects upon all business and trade, well might we be surprised and astonished at the opportunities afforded for accumulation and the chances for disaster, that by rule of cycles we are compelled to predict.

Persons who undertake to search for coal outside of the coal fields, to mine for ore outside of the iron region, or prospect for any mineral by which through ignorance of the teachings of geology, they would be constantly led to squander their means for that which they can not find—could be compared to a person who undertakes to make money during the decline of prices. Failures in business are caused principally by our ignorance of *when* the ups and downs in prices are to take place. It has been stated that in the city of Boston, in a series of forty years after the year 1800, that only five in one hundred men remained in business; they had all in that time failed or died destitute of property. It has been stated and ascertained that not more than one per cent of the best class of merchants escape from failing in Philadelphia, and that not more than two per cent of the merchants of New York ultimately retire on an independence during periods of twenty-five and thirty years. In Cincinnati, out of a list of some four hundred of the principal business men who were in trade in that city at a certain period, there were only five in business at the end of twenty years from that date. Such is mercantile success, and we see the same repeated in all the leading and different branches of trade.

As compiled by Dunn, Barlow & Co., of New York City, for the year 1873, throughout the country there were 5,183 failures of business men, with liabilities aggregating to $228,499-000; for the year 1874 there were 5,830 failures, with liabilities of $155,239,900; and the indications of reports for 1875, are that the failures will number as many as in the former years. The greater proportion of these failures were brought about by losses sustained in the shrinkage of values, and decline of prices in each price and panic cycle. The people seem ignorant of the terrible teachings of history, and few are prepared to take advantage of these turns in trade; and the great majority, through ignorance of the time when the ups and down in prices are to take place, are caught with incomplete enterprises upon their hands.

It is noticed that the great majority of the business men of broken down fortunes, have become so not by accident, but by dealing too largely when prices were on the decline. In the general declines of business after the panics of 1819, '37, '57, and '73, the loss to the nation through non-employment of labor and in various ways, is estimated to aggregate a sufficient sum in each of these reactions to pay our national debt. George Peabody laid the foundation of his fortune by buying American securities in one of our commercial depressions, the price which, taken at the advance, led him on to competence.

Reader, if you are young, life is short. You can not afford to make any mistakes, or miss any opportunities. You must take the tide at the advance. You can not wait a life time for the results of your experience; you must act upon what others know, or your life will be spent to little use and without much accumulation of property. The cycles of prosperity and adversity alternate inside of every ten years; but few of these prosperous decades are yours in an active business life; therefore do not waste your strength, or impair your energies on these periodic declines, as fore shadowed in the future by the bright written pages of past history.

Barnum has well said, in his celebrated lecture on the art of money getting, "You can not accumulate a fortune by taking the road that leads to poverty." The whole history of trade and commerce is full with the records of disaster, which has been brought about by mistakes of men who could not read the letters upon the sign posts; while on the other hand our libraries are crowded with the chronology of man's success in business and trade, by taking the price and times at the advance, which leads on to fortune.

Within the present century the increase of knowledge, improvements in machinery, and the discoveries in the arts and sciences, have advanced with a speed unparalleled in the annals of history. New light in various departments of human activity is now rapidly and continually breaking in upon the world. The invention of the steamboat, railroad, and telegraph, have imparted astonishing lessons to mankind. Each discovery of the laws of nature unfolds to the mind of man, new and exalting evidences of the wisdom of the Creator. Astronomers who attempt to explore the immensity of the starry regions; to discover unseen and unknown worlds, and to find out the ways of God in the wonders of the heavens, are not in this enlightened age denounced as false philosophers and charged with an impious invasion of the domain of God. Each rising science has fought and struggled with superstition and ignorance; and in all ages no effort has been spared to blast them in the bud of their being, or crush them in the cradle of their infancy.

It has only been a short time before the present century, that if any one had predicted the crossing of the ocean in a vessel driven by steam, or of conveying news by electric agency around the earth, over the land and under the water in advance of time, or of daguerreotyping the human face on a metallic plate by the light of the sun, and then chemically fixing it there; or of forecasting the future of the weather; production and prices by the rule of cycles as regulated by providence; such persons would have been considered visionary, their predictions regarded as contemptibly absurd; their authors the most disingenious of men, and their theories and systems treated with persecution and ridicule.

The day is past for men to be forced to drink the juice of the hemlock for having peculiar notions of Deity, and sent in chains to the gallows, or imprisoned in gloomy dungeons for announcing scientific discoveries. Galileo was condemned by the inquisition of Rome for teaching the doctrine of the earth's revolutions. Galileo was right, and the world moves.

Science has many things to achieve in agriculture, manufacture, mining, and commerce. The science of *price cycles* is yet in the cradle of its infancy, but waiting its time to mature full development, to unfold its principles, and declare its oracles to all mankind, and to demonstrate that the causes and the laws of nature in production are not past finding out; and that man in his onward path of progress, with the aid of electric science, will ultimately grasp the future, and make plain all the ways of God; which, when accomplished in this world, will be the acme of human knowledge, the consummation of human perfection, and the end of human destiny.

1954 POSTSCRIPT

SAMUEL BENNER'S FORECAST OF 1875

(A revision of an article printed in our report for February, 1952)

Summary

A forecast of pig iron prices made in 1875 by Samuel Benner, purely on the basis of inherent cycles, came true from the time it was made up to 1935 with a gain-loss ratio, based on imaginary trading, of 31 to 1. This is the most remarkable price forecast ever made.

However, Benner's cycle lengths were not quite accurate and his forecast is now getting out of step with reality.

A partial revision of Benner's forecast will appear in the March 1954 report.

THE proof of the pudding is in the eating. Your most convincing proof of the significance of a cycle is to have it keep on coming true after discovery.

Seventy-nine years ago, in 1875, a self styled farmer of Dundee, Ohio, copyrighted a book of forecasts based on cycles, or regularly recurring ups and downs, in various phenomena. With bold assurance he forecast the future prices of pig iron, hogs, corn, and cotton. He also forecast the coming of financial panics or "commercial revulsions."

How Did Benner's Forecast Come Out?

The purpose of this article is to examine his forecast in regard to pig iron prices, and to see the extent to which this forecast succeeded or failed. If his cycles continued you will have the best of all possible evidence in regard to their significance.

Benner's book of 130 pages was reproduced entire by the Foundation for the Study of Cycles in 1948 as No. 24 in our Reprint series.

That part of it dealing with pig iron prices—together with his preface, introduction, predictions, and conclusion—are reprinted as a supplement to this issue of our monthly report. In this supplement the parts having to do with corn, hogs, cotton, panics, and theory have been largely omitted. To see them you will have to refer to Foundation Reprint No. 24 or to Benner's original book, which is available in many public and university libraries.

The data upon which Benner based his conclusions are chiefly the annual average prices of No. 1 anthracite foundry pig iron at Philadelphia from 1844 to 1874, as compiled by the American Iron and Steel Institute. Benner also had access to such prices for pig iron as may have been contained in the report of the Secretary of the Treasury for 1863.

The "Cast Iron Rule"

On the basis of this information he formulated what he called the "cast iron rule" that, starting in 1834, low prices would come at intervals of 9, 7, and 11 years (a total of 27 years), and repeat; and that, starting in 1837, high prices would come at intervals of 8, 9, and 10 years (also a total of 27 years), and repeat.

He called this sequence a 27-year cycle, but he did not mean, as we would today, that prices tended to go up for 13 1/2 years and then down for a like interval. He meant instead that each 27-year interval showed three nine-year cycles, with repetitive irregularities as indicated.

To show the matter more clearly I print below as Table 1 one of Benner's own charts.

High Years and Low Years

Using Benner's rule, it is purely a matter or arithmetic to project highs for 1881, 1891, 1899, 1908, 1918, 1926, 1935, 1945, 1953, etc., and lows for 1877, 1888, 1897, 1904, 1915, 1924, 1931, 1942, 1951, 1958, etc.

Benner speaks of his high years as "the highest priced years," his low years as "lowest priced years," but his table of pig iron prices shows that you must take the adjective "highest" with a grain of salt. For example 1845 is one of his "highest price years," yet that part of his own table of prices running from 1844 to 1851 reads as follows:

Year	Dollars per ton	
1844	$25 3/4	
1845	29 1/4	"highest priced year"
1846	27 7/8	
1847	30 1/4	(true high)
1848	26 1/2	
1849	22 3/4	
1850	20 7/8	"lowest priced year"
1851	21 3/8	
etc.	etc.	

Readers of his forecast therefore are put on notice that "highest" means higher than the years of low before or after, and vice versa; not "highest" in any literal sense.

Seventy-nine years have elapsed since Benner made his picturesque forecast. How has it come out?

If you want to take Benner literally, in almost no instances were his years of high the years of highest prices, or his years of low the years of lowest prices. But if you will settle for a definition of "high" as being higher than the indicated years of low or either side of it, and vice versa, the forecast has been amazing. No other forecast of prices that I ever heard of begins to compare with it.

Gain - Loss Ratio of 31 to 1

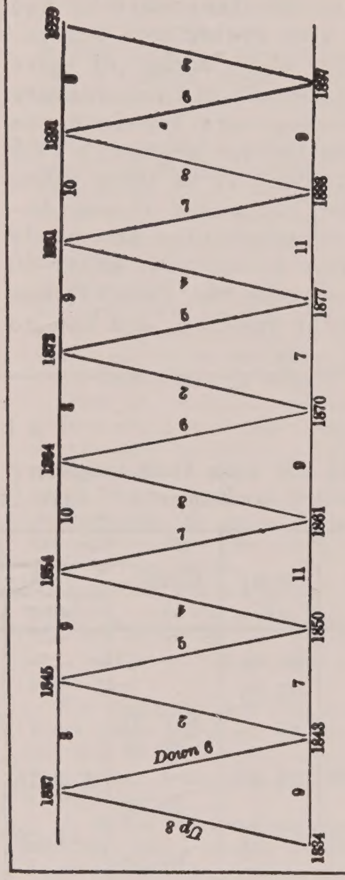
The profit or loss that would have resulted from imaginary purchase and sale, and short sale, of pig iron according to the Benner formula over the seventy-nine years since his book was copyrighted is shown in Table 2.

Up to World War II, twelve of your imaginary transactions would have been profitable, two would have shown losses.

The loss for the two unprofitable transactions was 9.3%, or an average of 4.6% per transaction. The gain for the 11 profitable transactions, not including the rise from 1915 to 1918 incident to World War I, was 288.5%—an average of 26.2% per transaction. If you include the rise from 1915 to 1918, the gain was 425.8%, or an average of 35.5% per transaction. If you start your imaginary trading in 1872, the date of high called for in Benner's formula, instead of in 1875, the year of copyright, your 12 profitable transactions would have shown 461.2% for the period, or an average of 38.4% per transaction. Looked at another way, the gain-loss ratio from 1875 through 1935, not including the rise due to World War I was 31 to 1; including World War I 44.8 to 1; and starting at 1872, in accordance with the formula, 49.6 to 1.

Table 1
The Years of Rising and Falling Pig Iron Prices
as Determined by Samuel Benner in 1875

A photographic reproduction of Benner's original table and chart as printed on page 45 of his book, **Benner's Prophecies of Future Ups and Downs in Prices.**



THE PAST.

	UPS.		DOWNS.
3	1835 1836 1837	6	1838 1839 1840 1841 1842 1843
2	1844 1845	5	1846 1847 1848 1849 1850
4	1851 1852 1853 1854	7	1855 1856 1857 1858 1859 1860 1861
3	1862 1863 1864	6	1865 1866 1867 1868 1869 1870
2	1871 1872		1873 1874 1875

THE FUTURE.

	UPS.		DOWNS.
			1876 1877
4	1878 1879 1880 1881	7	1882 1883 1884 1885 1886 1887 1888
3	1889 1890 1891	6	1892 1893 1894 1895 1896 1897
2	1898 1899		

Forecast Now Out of Step

Since 1935 however, Benner's forecast has fared badly. First of all the next projected low fell in 1942, a year of war. The next high, scheduled for 1945, was a year of price control. And 1951, the current year of low has run afoul of still another war and of the "Fair" deal with its 40¢ dollars.

But we do not need to provide Benner with alibis. He himself recognized that there were fractional years involved in his pig iron cycles, "but not sufficient fractions in any cycle within the last 40 years, **and will not be before 1891** [bold face supplied], to change the number of years in any high priced year cycle of pig iron."

That is, due to the fact that he had observed that the true cycles were not exactly an integral or whole number of years in length, Benner himself did not venture to project his cycles very far into the future. In carrying his projection to 1935 we have already strained it to three times the breaking point for which it was designed. Instead of attempting to supply alibis it is simpler to say that after 60 years of amazing success the forecast has got out of step with reality, and can no longer be counted upon for useful service. But oh, those 60 years!

The Task Ahead

The task ahead is to use the additional data and the improved statistical tools now available to us to make what I hope will prove to be an even more accurate forecast of pig iron prices. But I shall be quite pleased if some future student of cycles, looking back at our work 60 years or so from now, finds that purchases and sales and short sales, based on our forecast, or one which you might make, shows, like Benner, after allowance for war distortions, gains which are 31 times as great as the losses.

The task of making a cycle analysis of pig iron prices is now in process. A progress report will be made to you in my March report.

E.R.D.

Table 2

Profit and loss from imaginary purchase & sale, and short sale, according to Benner's "cast iron rule," 1872 or 1875 to 1953.

Date	Buy at	Sell at	Short at	Cover at	Gain or Loss				Comment
					Actual		Per Cent		
					Long	Short	Long	Short	
1872			$48.94						Formula high
1875			25.53						Copyright date
1877				$18.92		$30.02		61.3	Formula profit
1877	$18.92			18.92		6.61		25.9	Copyright date profit
1881		$25.17	25.17		$ 6.25		33.0		
1888	18.88			18.88		6.29		25.0	
1891		17.52	17.52		-1.36		-7.2		
1897	12.10			12.10		5.42		30.9	
1899		19.36	19.36		7.26		60.0		
1904	15.57			15.57		3.79		19.6	
1908		17.57	17.57		2.00		12.8		
1915	14.01			14.01		3.56		20.3	
1918		33.25	33.25		19.24		137.3		World War I
1924	22.10			22.10		11.15		33.5	
1926		21.64	21.64		-.46		-2.1		
1931	17.35			17.35		4.29		19.8	
1935		18.68	18.68		1.33		7.7		
1942	24.00			24.00		-5.32		-28.5	World War II
1945		25.02	25.02		1.02		4.3		Price control
1951	52.38			52.38		-27.36		-109.4	"Fair" Deal
1953		55.70	55.70		3.32		6.3		

(1951 AND 1953 FIGURES HAVE BEEN MULTIPLIED BY .97688 TO MAKE THEM COMPARABLE WITH EARLIER FIGURES.)

GLOSSARY

Cycle, coming from a Greek word meaning circle, implies coming around to the place of beginning. Strictly speaking, in the word itself there is no necessary implication of regularity, but the word is often used loosely to denote rhythm or periodicity.

When the word cycle is modified by a time interval such as 6-year cycle, 20-month cycle, 17-day cycle, the phrase usually means a cycle that recurs with reasonable regularity. In other words, it denotes rhythm.

Rhythm, coming from a Greek word meaning measured time, implies a beat, or a tendency toward perfect regularity or periodicity. It is what we really mean on most of the occasions when we use the word cycle.

Cycle analysis, as we are using the term in this bulletin, should really be called rhythm analysis, as we are concerned with **rhythmic cycles**--cycles that recur with a beat.

Periodicity, in the strict sense, is the quality of being regularly recurrent. It is a quality not often found in nature. The ideal cycles which are often added to a chart to diagram a rhythmic cycle are true periodicities.

A **wave** is one single cycle or undulation. Waves have **frequency**, **amplitude**, **period**, and, at least when they represent harmonic curves, **phase**.

Frequency is the number of complete vibrations to and fro--i.e. waves--per second It is a term not used by cycle analysts when dealing with cycles that are over a second in length.

Amplitude is the extent of a vibratory movement measured from the average position to an extreme position; that is, it is the height or depth of the wave above or below the axis around which the wave oscillates.

Positive amplitude is the distance above the axis, **negative amplitude** is the distance below the axis, **overall amplitude** is the sum of the positive and negative amplitudes. Amplitudes may be expressed in absolute units or as a percentage of the value of the axis.

Period is the interval of time required for a periodic motion to complete a cycle and begin to repeat itself. It is the length of the wave from crest to crest or trough to trough or from some other point on the curve taken as the **epoch**. The **epoch** is the point on the curve chosen as the beginning of the wave. In physics and astronomy it is usually taken as the point where the curve crosses the axis on its upward motion, but it may be any other point as well.

Phase, in a simple harmonic curve, is the point or stage in the period to which the oscillation has advanced considered in relation to a standard position or assumed instant of starting. It is measured along the axis, usually in degrees. By extension of meaning, **positive phase** is therefore the part of the wave above the axis or trend, and **negative phase** is the part of the wave below the axis or trend. When the crests (or troughs) of two or more different series of waves come at the same time, the waves are said to be **in phase** with each other. When the crests of one series of waves coincide with the troughs of another series, the series are spoken of as in **reverse phase**.

A **simple harmonic curve** referred to once or twice above, is the curve you would get by tracing the motion of a pendulum upon a piece of smoked paper that was moving at uniform speed at right angles to the direction in which the pendulum was swaving back and forth. It is perfectly simple, regular, and symmetrical and, in mathematical study, is usually referred to as a **sine curve**. A single oscillation is called a **sine wave**.

A **rectilinear** or **saw-tooth wave**, on the other hand, is a wave the sides of which are straight lines; in other words, zigzag.

Trend is the tendency of data in a series to increase or decrease during a long period of time. The expression, "a long period of time," cannot be defined except relatively. If you are dealing with hourly figures, you might consider trend as the general direction over the past 30 or 40 hours. With yearly figures "trend" might mean the general tendency over the past 100 years or more.

An **average** is a typical value which tends to sum up or describe a number of figures. There are at least five different kinds of averages commonly used by statisticians; but the one which ordinary folk think about when they hear the word **average** is the one computed by adding all the items together and dividing the total by the number of items. Thus, if we have four items, 10, 12, 11, and 13, the average of these items is 10 + 12 + 11 + 13 (46) divided by 4, or 11½. An average of this sort is more accurately called the **arithmetic mean**.

An arrangement of numbers is called a **series**.

When the numbers with which we deal represent events which occur one after another in time, the arrangement is called a **time series**. Thus, in the example above, if 10, 12, 11, and 13 represent the price of cotton for each of four consecutive years, or represent the number of accidents on each of four consecutive days, you would call the numbers by this name—a time series.

You could still average the numbers and say, for example, that the average price for all four years was 11½ cents, or that during the period there was an average of 11½ accidents per day, as the case might be.

You could also say that the average price for the first three years was 11 cents, (10 + 12 + 11 (33) divided by 3) and that the average price for the last three years was 12 cents (22 + 11 + 13 (36) divided by 3).

A **moving average** is a succession of averages secured from a series of numbers by dropping the first number (item) in each group averaged and including the next number in the series after the group, thus obtaining the next group to be averaged, and so on.

Thus, when you averaged the first three numbers of our time series (10, 12, and 11) and got 11, and then dropped the first number (10) and added the fourth number (13) and averaged again and got 12, you were constructing a moving average

Because you were averaging three items at a time, you would call the result a 3-item or 3-term moving average. If the items represented yearly values you would call the result a 3-year moving average. If the items represented daily values,, you would call the result a 3-day moving average.

The **moving total** is the series of successive totals from which the moving average is computed. For example: When , above, you added 10, 12, and 11 to get 33, and then added 12, 11, and 13 to get 36 (as a step in the task of getting 11 and 12, the two terms of the moving average), you were computing a moving total.

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